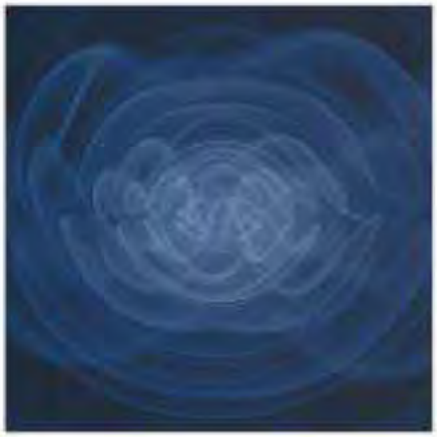
CENTRO DE ASTROFÍSICA UNIVERSIDADE DO PORTO

RELATÓRIO DE GESTÃO E CONTAS













Centro de Astrofísica da Universidade do Porto

U.PORTO

ANO 2025

Versão aprovada na reunião da Assembleia Geral no dia 2026-04-24.

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Sumário da Gestão

Caracterização da Associação

O Centro de Astrofísica da Universidade do Porto (CAUP) é uma associação científica com personalidade jurídica, tendo sido constituída em 4 de Maio de 1989 como instituição privada sem fins lucrativos, pela Universidade do Porto (U.Porto). Tem o estatuto de utilidade pública desde setembro de 1991.

A Associação tem por objetivo apoiar e promover a formação e investigação na área de Astronomia/Astrofísica e da instrumentação associada, quer através de iniciativas próprias, quer colaborando de forma independente com entidades públicas e/ou privadas, nomeadamente através do estabelecimento de parcerias, protocolos e intercâmbios nacionais e/ou internacionais, bem como desenvolver infraestruturas laboratoriais relacionadas com a área de atividade do CAUP.

Constituem fins do CAUP apoiar e promover, designadamente:

- A atividade de investigação científica fundamental e aplicada em Astronomia/Astrofísica através de projetos nele desenvolvidos, bem como a aquisição de conhecimentos básicos de carácter interdisciplinar, que abram novas perspetivas à investigação aplicada;
- A Astronomia/Astrofísica no país através da organização de conferências, cursos de curta duração, seminários e outras atividades similares;
- A formação de pessoal científico e técnico, podendo conduzir à elaboração de dissertações de mestrado ou teses de doutoramento;
- O ensino em Astronomia/Astrofísica, nomeadamente a nível de licenciatura e pós-graduação;
- A divulgação científica na área de Astronomia/Astrofísica.

Órgãos Sociais

Durante o ano de 2025, a composição dos Órgão Sociais do CAUP foi:

Mesa da Assembleia Geral

Presidente	Universidade do Porto (representada por Pedro N. S. Rodrigues)
Vice-Presidente	Nuno M. C. Santos
Secretário	João J. F. G. A. Lima

Direção

Presidente	Mário J. P. F. G. Monteiro
Vogal	Margarida M. S. Cunha
Vogal	Sérgio A. G. Sousa

Conselho Fiscal

Presidente	Filipe A. L. Pires
Relator	Universidade do Porto (representada por Marlene S. A. T. Rebelo)
Vogal	Jorge Filipe S. Gameiro

Os membros do **Conselho Consultivo** em 2025 foram:

- Prof. Thierry Montmerle (Institut d'Astrophysique de Paris, France)
- Prof. Joseph Silk (University of Oxford, United Kingdom)
- Prof. Michel Mayor (Université de Genève, Switzerland)

Os Associados do CAUP a 31 de dezembro de 2025 eram:

- Associados Fundadores (1): Universidade do Porto
- Associados Efetivos (26): Catarina G. G. Lobo, Carlos J. A. P. Martins, Daniel F. M. Folha, Filipe A. L. Pires, Ilídio A. P. M. Costa, Jarle Brinchmann, João J. F. G. A. Lima, Jorge F. S. Gameiro, José

C. S. Fonseca, Margarida M. S. Cunha, Manuel A. S. Monteiro, Maria Teresa V.T. Lago, Mário J. P. F. G. Monteiro, M. S. Nanda Kumar, Nuno M. C. Santos, Olivier D. S. Demangeon, J. Paulo Maurício de Carvalho, Pedro P. Avelino, Pedro T. P. Viana, Polychronis Papaderos, Ricardo S. S. C. Reis, Sérgio A. G. Sousa, Susana C. C. Barros, Tiago J. L. C. E. Campante, Vardan Adibekyan, Vitor M. M. Costa

As alterações na lista de associados validadas na reunião da Assembleia Geral de 2025-12-18 foram:

- Saídas (1): Ângela R. G. dos Santos
- Entradas (3): Ilídio A. P. M. Costa, José C. S. Fonseca, Olivier D. S. Demangeon

Instalações

O CAUP está instalado no edifício que acolhe o Planetário do Porto, edifico este que é propriedade da U.Porto após a extinção da Fundação para a Ciência e o Desenvolvimento (FCD) em 2013, com uma área total útil de 3580 m². O espaço atribuído ao CAUP resulta do financiamento atribuído pelo Ministério da Ciência e Tecnologia para a construção do edifício planeado de raiz para albergar o CAUP e o Planetário do Porto.

O espaço dedicado para uso do CAUP é de 915 m², correspondendo a gabinetes, salas de seminários e reuniões, armazéns, sala de rede, biblioteca, observatório e Astroteca. A área restante é ocupada pelo Planetário, sendo uma parte desta partilhada, nomeadamente o átrio e o auditório (60 lugares).

O CAUP é responsável pela gestão científica, educacional e administrativa do Planetário do Porto, de acordo com o contrato sobre o exercício de poderes públicos assinado com a U.Porto em julho de 2013.

Recursos Humanos

O CAUP tem recursos humanos próprios que, no final de 2025, correspondiam a um total de 34 colaboradores com contrato de trabalho. Estes podem ser agrupados por tipo de contrato e área de trabalho da seguinte forma (a 31 de dezembro de 2025):

Contratos sem termo (total de 14):

Divulgação:

1) Elsa M. P. S. Moreira – *técnico*
2) Paulo J. T. Pereira – *assessor gráfico*
3) Filipe A. L. Pires – *especialista*
4) Ricardo S. S. C. Reis – *técnico*

SyNaPSE:

5) Manuel A. S. Monteiro – *especialista*
6) Jorge H. C. Martins – *programador científico*
7) Pedro Moreno – *programador científico*

Administração e Serviços:

8) Adriana Silva – *técnico*
9) Argentina M. T. Pereira – *técnico*
10) Carlos A. G. Gonçalves – *porteiro*
11) Elsa M. P. P. Silva – *técnico*
12) Ernesto J. Silva – *porteiro*
13) Fernando M. S. Soares – *porteiro*
14) Joana Bateira – *técnico*

Contratos a termo (total de 20):

Investigação:

1) Ana S. Paulino Afonso – *investigador júnior*
2) André M. A. C. V. Silva – *investigador júnior*

3) Carlos J. A. P. Martins – *investigador principal*
4) Clara Sousa e Silva – *investigador auxiliar*
5) Eduardo A. S. Cristo – *investigador júnior*
6) José C. Fonseca – *investigador auxiliar*
7) Margarida M. S. Cunha – *investigador principal*
8) Polychronis Papaderos – *investigador principal*
9) Sérgio A. G. Sousa – *investigador principal*
10) Susana C. C. Barros – *investigador auxiliar*
11) Tiago J. L. C. E. Campante – *investigador auxiliar*
12) Vardan Zh. Adibekyan – *investigador auxiliar*
13) William Dethier – *investigador júnior*

Divulgação:

14) Diogo de Magalhães Sant'Ana - *técnico*
15) Rodrigo Oliveira – *assistente técnico*
16) Tânia Cunha – *técnico*

SyNaPSE:

17) L. Filipe Pereira – *investigador júnior*
18) Olivier D. S. Demangeon – *investigador auxiliar*
19) Rui Santos – *técnico*
20) Rui Sousa – *assistente técnico*

Além de contratos de trabalho, o CAUP acolhe igualmente bolseiros, quer através de contratos de bolsa próprios quer sendo instituição de acolhimento de bolseiros da FCT (ver relatório de atividades), um professor em mobilidade estatutária e dois investigadores financiados pelo *Fonds national suisse*:

- Ilídio A. P. M. Costa – *mobilidade estatutária*
- Khaled Al Moulla – *investigador junior*
- Yolanda Frensch – *investigador junior*

Síntese da Atividade

A atividade do CAUP é estruturada em torno das iniciativas desenvolvidas no âmbito das unidades funcionais, estando atribuída uma missão específica a cada uma destas unidades:

- **Unidade de Investigação (UnI)**: coordena todas as iniciativas e atividades que estão associadas à investigação, nomeadamente seminários, conferências, reuniões de trabalho, participação em projetos científicos e/ou de instrumentação, participação em consórcios nacionais e internacionais nas áreas de investigação relevantes, participação em comités científicos, etc. Com a criação da unidade de investigação Instituto de Astrofísica e Ciência do Espaço (IA), financiada pela FCT a partir de 2015, as competências da UnI do CAUP passaram a ser delegadas na Coordenação do IA. O IA tem como instituição de gestão: CAUP, FCiências.ID, UCoimbra, FCUL.
- **Systems, Networks, and Programming for Scientific Exploration (SyNaPSE):** é um centro de competências com uma equipa multidisciplinar de suporte técnico e científico dedicada a viabilizar a investigação astrofísica de ponta através de infraestruturas robustas, desenvolvimento de software avançado e conhecimento especializado na área. A equipa reúne especialistas em software científico, administração de redes e sistemas, redução e análise de dados, computação avançada e suporte de instrumentação, prestando serviços tanto locais como ao nível do consórcio da missão/programa.
- **Unidade de Formação (UnF):** coordena/apoia todas as atividades de formação organizadas pelo CAUP ou que têm a sua participação/colaboração, nomeadamente formação universitária (licenciatura, mestrado e doutoramento), formação contínua, cursos avançados e organização de eventos que visam reforçar a qualidade da formação oferecida pelo CAUP.
- **Núcleo de Divulgação (ND):** organiza todas as atividades de divulgação e promoção da cultura científica, incluindo as do Planetário do Porto – Centro Ciência Viva, e outras iniciativas para o público e escolas que são oferecidas pelo CAUP regularmente. Também coordena a participação do CAUP em projetos nacionais e internacionais de divulgação científica e assegura ainda a componente de imagem/grafismo e de comunicação do CAUP. Esta unidade integra e coordena o Grupo de Comunicação de Ciência do IA.
- **Unidade de Administração e Serviços (UnAS):** assegura todas as funções e tarefas de apoio administrativo às atividades do CAUP e sua gestão. Garante o bom funcionamento das instalações e equipamentos, incluindo os serviços de Tecnologias da Informação e Comunicação (TIC), e dá apoio à gestão das atividades, projetos e eventos na componente de contabilidade e administração. Esta unidade trabalha em proximidade com a Coordenação do IA por forma a garantir uma boa gestão desta unidade de investigação.

A descrição detalhada da atividade desenvolvida em 2025 no âmbito de cada uma destas unidades é apresentada na componente do relatório sobre as atividades.

Análise Económico-Financeira

Em 2025, registou-se novamente um resultado líquido positivo, refletindo um resultado operacional igualmente positivo, decorrente da boa execução dos financiamentos existentes ao longo do ano.

O montante global dos gastos apresentou uma diminuição face a 2024, fixando-se em cerca de um milhão e novecentos mil euros, enquanto os rendimentos evidenciaram um ligeiro aumento, conforme ilustrado na Figura 1.

O capital próprio registou uma subida assinalável. Por sua vez, as disponibilidades no final do exercício apresentaram uma ligeira redução, situando-se acima de um milhão e trezentos mil euros.

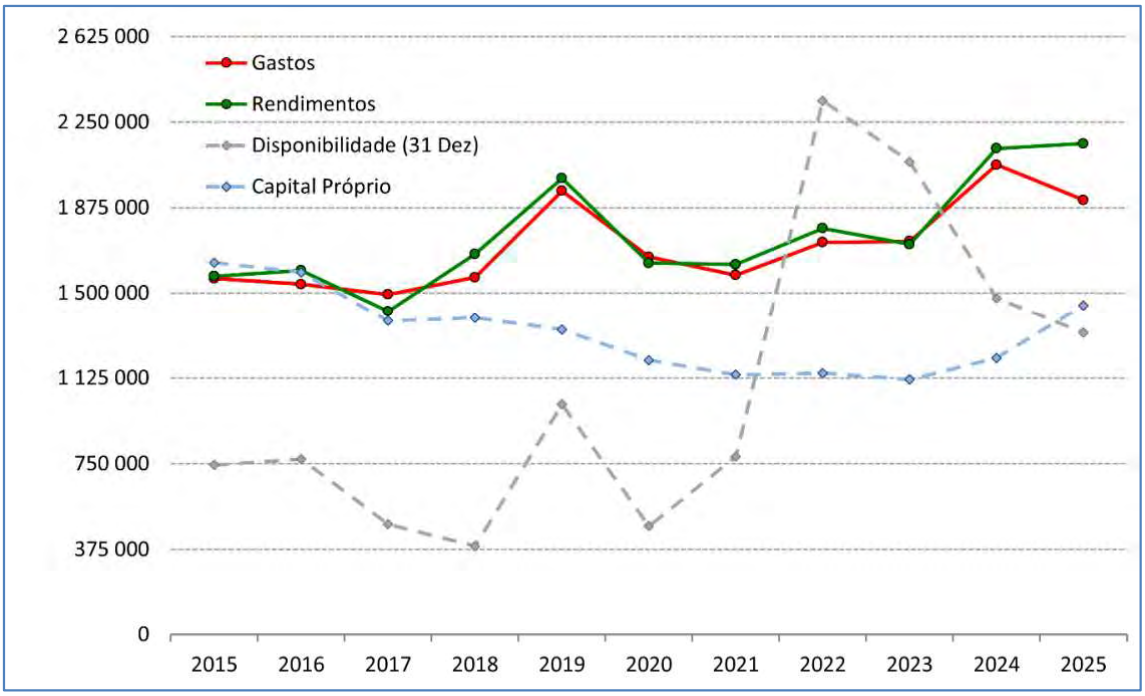


Figura 1: Evolução dos Gastos (linha vermelha) e dos Rendimentos (linha verde), para o exercício por ano fiscal, desde 2015. Os valores dados estão em euros. Também se indica as disponibilidades (linha cinzenta) existentes a 31 de dezembro de cada ano e o capital próprio (linha azul).

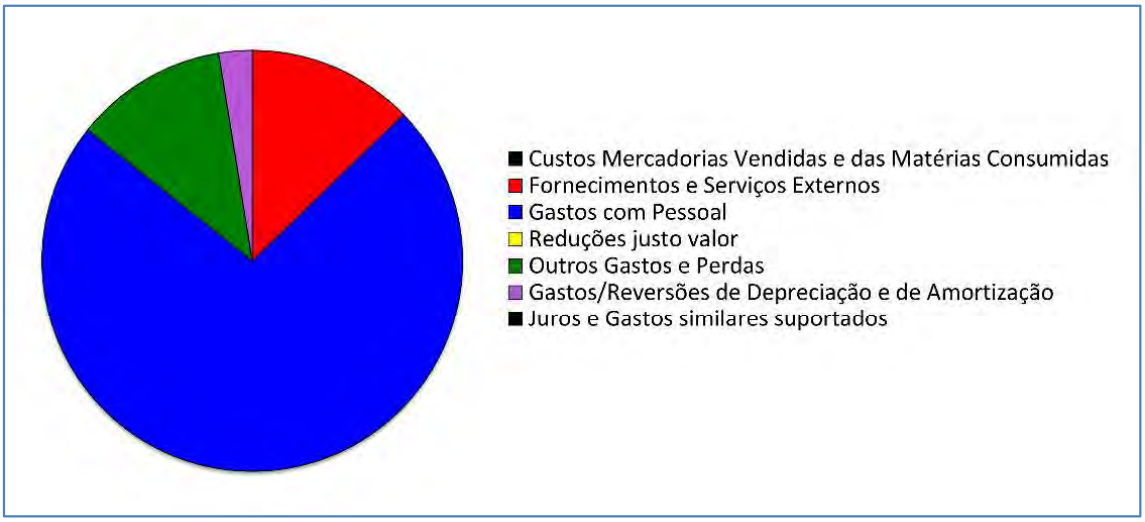


Figura 2: Distribuição dos Gastos do exercício de 2025, correspondendo a um total de 1 908 134,28 euros.



Figura 3: Distribuição dos Rendimentos do exercício de 2025, correspondendo a um total de 2 155 942,72 euros.

Uma fração significativa dos custos corresponde, naturalmente, a despesas com recursos humanos, quer através de encargos com pessoal, quer por via da contratação de bolseiros. Esta componente registou uma ligeira diminuição em 2025, refletindo sobretudo o término de contratos celebrados ao abrigo da norma transitória do Decreto-Lei n.º 57/2016.

A Figura 2 ilustra o peso relativo das diferentes componentes de gastos nas contas de 2025. A principal componente da despesa do CAUP continua a resultar de financiamento assegurado através de projetos (Figura 3), pelo que estes encargos não representam custos continuados para além do período de vigência dos respetivos contratos de financiamento aprovados.

O CAUP depende maioritariamente de financiamentos externos, provenientes da Fundação para a Ciência e a Tecnologia (FCT), da Comissão Europeia (CE), da ESA-Portugal (PRODEX) e de outras entidades financiadoras, conforme ilustrado na Figura 4.

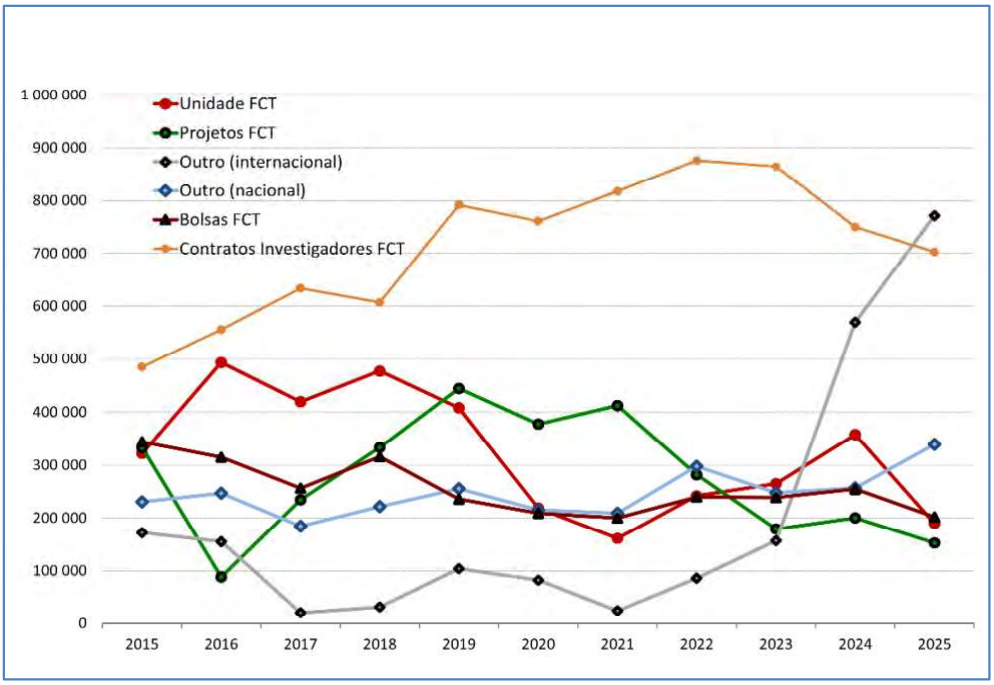


Figura 4: Distribuição das fontes de financiamento para o exercício, por ano fiscal, desde 2015.

O financiamento proveniente da Unidade de I&D registou uma diminuição significativa em 2025, essencialmente devido à incerteza associada ao arranque do novo programa de financiamento. O financiamento de projetos da FCT apresentou igualmente uma descida, como consequência do término de vários projetos ao longo de 2024.

Em sentido inverso, o financiamento nacional proveniente de outras fontes registou uma subida assinalável. No que respeita a outros financiamentos internacionais, observou-se um aumento significativo, resultante do acréscimo de atividade do projeto FIERCE, financiado pelo European Research Council (ERC).

O financiamento associado aos contratos de investigador da FCT manteve a tendência de descida já observada em 2024, de acordo com o referido anteriormente. Em 2025, esta componente totalizou cerca de setecentos mil euros, envolvendo 15 investigadores.

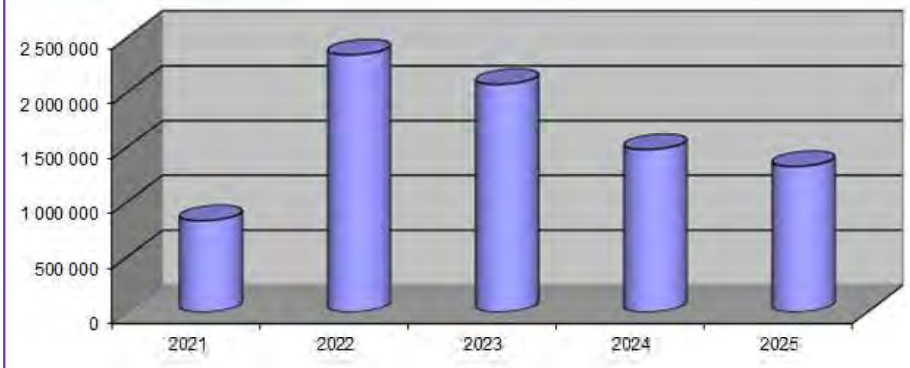
Uma outra fonte de financiamento indireto corresponde às bolsas de investigação atribuídas diretamente pela FCT, cujo montante global registou uma ligeira diminuição face a 2024. Embora não sejam executadas através do CAUP, estas bolsas constituem um financiamento relevante das atividades de investigação e formação, sendo a sua obtenção fortemente apoiada pelo CAUP. Em 2025, esta componente totalizou aproximadamente duzentos mil euros, correspondendo a 15 estudantes de doutoramento e a uma Bolsa de Gestão de Ciência e Tecnologia (BGCT) na área da divulgação e promoção da cultura científica.

O peso relativo destas duas componentes — contratos de investigador FCT e bolsas da FCT — encontra-se igualmente representado na Figura 4. À semelhança do que sucede com as remunerações dos docentes, os montantes das bolsas FCT não são incluídos nas contas do CAUP.

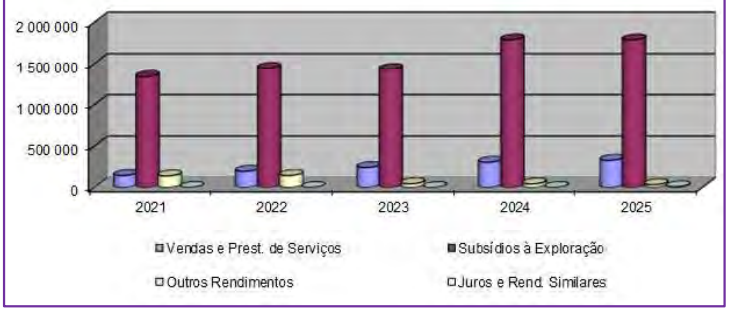
Indicadores Económico-Financeiros

Nesta seção fornecem-se alguns dos indicadores económico-financeiros das contas de 2025, em comparação com os 4 anos anteriores.

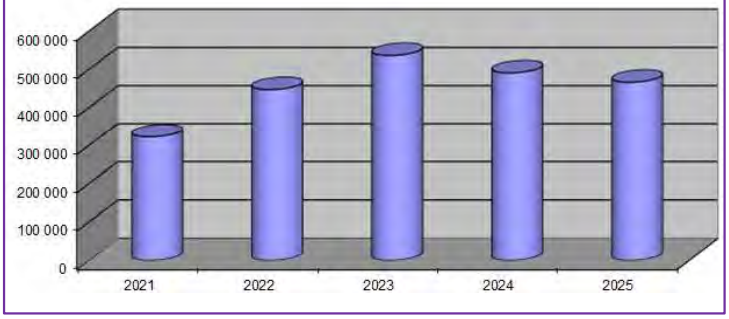
Meios Financeiros Liquidos	2021	2022	2023	2024	2025
Caixa	35	35	35	35	35
Depósitos Bancários	781 028	2 343 397	2 075 049	1 377 358	1 323 657
Outros Instrumentos Financ.	49 381	0	0	100 165	
TOTAIS	830 444	2 343 432	2 075 084	1 477 558	1 323 692



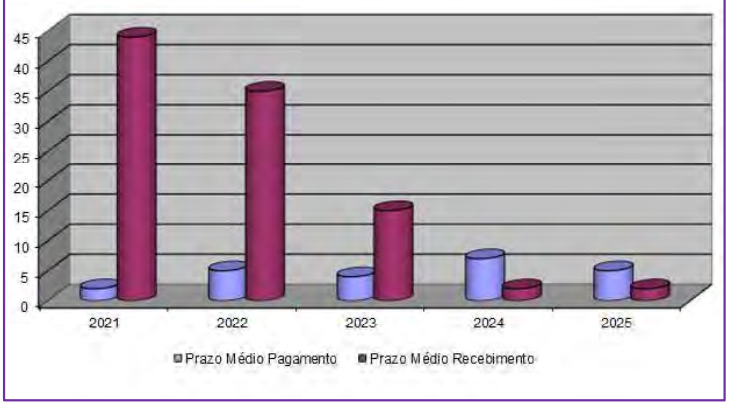
Evolução dos Rendimentos	2021	2022	2023	2024	2025
Vendas e Prest. de Serviços	144 550	195 424	240 581	304 356	327 943
Subsídios à Exploração	1 340 789	1 444 064	1 428 904	1 788 065	1 787 070
Outros Rendimentos	138 792	144 239	44 523	42 543	32 680
Juros e Rend. Similares	1 271	673	10	10	8 250
TOTAIS	1 625 402	1 784 400	1 714 018	2 134 974	2 155 943



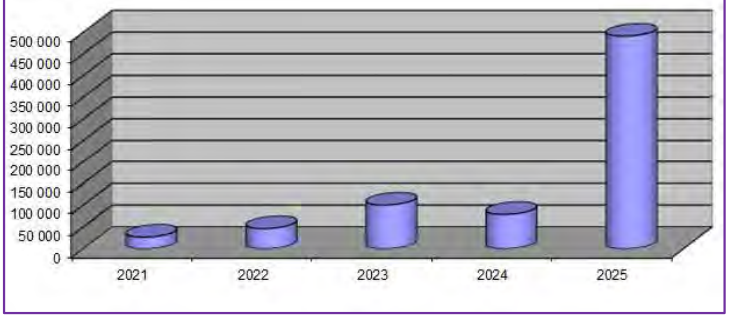
Fornecedores e Outros Passivos Correntes	2021	2022	2023	2024	2025
Fornecedores	375	2 663	3 761	7 696	3 251
Outros Passivos Correntes	321 333	444 147	532 187	482 685	462 686
TOTAIS	321 708	446 810	535 948	490 380	465 937



Tesouraria	2021	2022	2023	2024	2025
Prazo Médio Pagamento	2	5	4	7	5
Prazo Médio Recebimento	44	35	15	2	2



Activo Fixo	2021	2022	2023	2024	2025
Aquisições	26 668	46 110	100 010	78 668	490 798
TOTAIS	26 668	46 110	100 010	78 668	490 798



Diversidade, Inclusão e Bem-estar

A Comissária do CAUP para estas funções, a Associada Catarina G. G. Lobo, foi eleita pela equipa do CAUP, em junho de 2025, tendo a sua nomeação sido validada pela Direção do CAUP a 13 de junho de 2025, por um período de três anos.

A tarefa mais premente na altura consistia na revisão do **Código de Conduta do CAUP**, existente apenas em versão embrionária. Essa revisão foi realizada, tendo uma proposta sido submetida a consulta pública no início de novembro. Após recebido feedback e incorporadas alterações, foi aprovada pela Direção uma nova versão a 28 de novembro de 2025, entrando esta imediatamente em vigor.

Ao longo do segundo semestre do ano, foram ainda realizadas as seguintes ações:

- Após identificação, pela Direção, de uma sala disponível para amamentação e descanso (para os membros do CAUP e público visitante do Planetário), foi feito o levantamento dos itens necessários para o bom funcionamento dessa sala (material de apoio, intervenções necessárias na casa-de-banho anexa, etc). A aquisição dos itens necessários e adaptação da sala encontram-se em curso.
- A casa-de-banho feminina do 1º andar foi equipada com produtos de higiene íntima e solicitaram-se mais contentores, para maior conforto das pessoas utilizadoras.
- Foram realizados contactos com membros do Grupo de Diversidade e Inclusão do IA, bem como com a Pro-Diretora da FCUP para a Integração, Inclusão e Ação Social, para troca de ideias, possibilidades de ação e potenciais parcerias futuras.
- Foram prontamente divulgadas via email, enviado para toda a equipa do CAUP, as atividades levadas a cabo na UP (abertas a pessoas membro e exteriores) com o objetivo de promover a inclusão, a diversidade e o bem-estar.

Perspetivas

Ao longo dos últimos anos o CAUP aumentou significativamente o financiamento proveniente da Comissão Europeia com a atribuição de uma *ERC Advanced Grant* ao Nuno M. C. Santos em 2022 (e com início de aplicação em 2023). Esta fonte tem sido complementada com fundos significativos que são obtidos através de financiamentos PRODEX. Porém, é fundamental assegurar que estes não são casos isolados procurando ativamente taxas de sucesso mais elevadas nestes importantes instrumentos de financiamento. Continua a ser feito, e planeamos reforçar, um esforço para estimular candidaturas dos investigadores ao Horizonte Europa e ao financiamento do ERC. Temos também expandido as opções para assegurar financiamento para atividades relacionadas com missões espaciais (PLATO, CHEOPS) através do mecanismo PRODEX.

Em 2025 o resultado da nova avaliação das unidades de investigação foi completado, com o IA a continuar classificado como "Excelente", o que é fundamental para o CAUP. No entanto o nível de financiamento não teve o aumento que se esperava, o que se traduz numa perda efetiva de poder de compra que irá ter consequências negativas para a atividade do IA-CAUP. A investigação permanece a um nível elevado, muito em resultado dos grandes projetos internacionais em que o IA-CAUP está envolvido, e a componente de

divulgação continua a ter um excelente desempenho. Estas são as componentes essenciais para que o IA possa agora aproveitar este novo período para consolidar a sua liderança e reforçar os pontos fortes que tem. O CAUP continuará a contribuir para que assim seja.

O CAUP, no âmbito do IA, continuará a tentar atrair, nacional e internacionalmente, excelentes candidatos, capazes de obter bolsas individuais de doutoramento e contratos de trabalho para investigação ao nível de pós-doutoramento. Em 2025 foram obtidos três contratos FCT CEECIND o que representa um resultado positivo.

Para fortalecer a capacidade de participação em grandes projetos internacionais, foi consolidado o centro de competências SyNaPSE. Embora transversal, este grupo trabalha em estreita proximidade com o grupo de instrumentação, alavancando a sua capacidade de resposta a compromissos internacionais. No futuro irá ser procurada uma expansão das atividades deste grupo, nomeadamente diversificando o tipo de contratos e de serviços que presta, através da angariação de novos contratos PRODEX e outros, eventualmente junto da indústria na área do espaço.

Desde 2013 que o CAUP é responsável pela gestão administrativa do Planetário do Porto, acumulando-a com a gestão educativa e científica, como especificado no contrato assinado com a U.Porto. Esta gestão garante uma forte sinergia entre a investigação científica e a divulgação, que se constitui como uma mais-valia no cumprimento do seu objetivo estatutário de contribuir para a divulgação científica em Astronomia e Astrofísica, proporcionando a possibilidade de continuar a atrair o interesse de jovens para esta área do conhecimento em particular, bem como em geral para as áreas STEM, e a contribuir para a literacia científica da população.

O Planetário teve um excelente ano em 2025 e iremos dar continuidade a esse desempenho em 2026. Esperamos continuar com o sucesso dos últimos anos na criação/aquisição de novas sessões de Planetário. Foi assegurado o financiamento PESSOAS2030 que irá reforçar de forma significativa os recursos disponíveis para o ND nos próximos três anos. Este contributo representa uma oportunidade para reforçar as atividades e fazer investimentos que sejam críticos para o futuro. Prevê-se que seja possível em 2026 trocar a carrinha do ND.

Em 2025 o CAUP continuou a contar com projetos financiados na área da divulgação e a ter uma ligação próxima com a Agência Ciência Viva (CV). Com a mudança de liderança no CV antecipa-se que a ligação do ND ao CV venha a ser reforçada no futuro próximo.

Temos vindo a negociar com a Universidade a adaptação do espaço onde funcionava a cafetaria, para se instalar um Laboratório do Cosmos, pelo que em 2026 trabalhar-se-á nesse sentido, ampliando significativamente as capacidades do Planetário de acolher grupos de estudantes num leque diversificado de atividades (incluindo em Laboratórios).

Atividades & Destaques

This component of the report describes the main initiatives and results obtained during the year 2025. The activity of CAUP is structured around Units: these are Research, SyNaPSE, Training, Outreach and Administration and Services. Each Unit has a Head, and a clearly defined mission. The activities within each Unit are described in the sections below. The appendices list some of the major indicators of the activity.

Human Resources

By the end of 2025 the team included:

- **32 Researchers** – corresponding to

  10 Lecturers (4.85 FTE): Catarina G. G. Lobo (FCUP), Daniel F. M. Folha (IUCS-CESPU), Ilídio André P. M. Costa (AE Santa Bárbara[1]), J. Paulo Maurício de Carvalho (FCUP), Jorge F. Gameiro (FCUP), João J. G. Lima (FCUP), Mário J. P. F. G. Monteiro (FCUP), Nuno C. Santos (FCUP), Pedro P. Avelino (FCUP), Pedro T. P. Viana (FCUP)

  22 Research Positions (20.45 FTE): Ana S. Paulino Afonso, André Miguel A. C. V. Silva, Carlos J. A. P. Martins, Cédric Pereira, Clara Sousa Silva, Eduardo A. S. Cristo, Jorge H. C. Martins, José C. Fonseca, Khaled Al Moulla (FNS), L. Filipe Pereira, Margarida S. Cunha, Marta Cortesão, Olivier D. S. Demangeon, Pedro Figueira (ESO), Pedro Moreno, Polychronis Papaderos, Sérgio A. G. Sousa, Susana C. C. Barros, Tiago J. L. C. E. Campante, Vardan Zh. Adibekyan, William Dethier, Yolanda Frensch (FNS)

- **29 PhD students**

  Afonso M. A. Vale, Afonso Morgado Mota, Alba Barka, Alexandre Branco, Ana F. S. Barros, Ana Rita Costa Silva, Andreas W. Neitzel, Bárbara M. T. B. Soares, Carmen San Nicolás Martinéz, Catarina M. J. Marques, Clara Marie Winckler, Daniel A. D. Vaz, Eduardo Campos Gonçalves, Inês Martins Rolo, Isabel Santos de Sousa, Jennifer Peralta Lucero, José Rodrigues, Juliana Amaral, Maya Shemesh, Miguel T. Clara, Paulina M. Zaworska, Pedro M. H. Branco, Ricarda Heilemann, Rúben A. R. Costa, Samuel R. Pinto, Sergei Mukovnikov, Shedrach Obumneme Chiaha, Telmo Monteiro, Yuri C. Damasceno

- **9 Outreach staff (7.7 FTE)**

  Diogo de Magalhães Sant'Ana, Elsa M. P. S. Moreira, Filipe A. L. Pires, Ilídio André P. M. Costa, Isabel Cardoso (U.Porto), Paulo J. T. Pereira, Ricardo S. S. C. Reis, Rodrigo Oliveira, Tania F. S. Cunha

- **10 Supporting staff (8.8 FTE)**

  Adriana Silva, Argentina M. T. Pereira, Carlos A. G. Gonçalves, Elsa M. P. P. Silva, Ernesto J. Silva, Fernando M. S. Soares, Joana Bateira, Manuel A. S. Monteiro, Rui Santos, Rui Sousa

CAUP also had 1 external support staff (legal adviser, corresponding to a total of 0.1 FTE).

CAUP also provides support to students enrolled in the 1st Cycle (Licenciatura em Física and others), 2nd Cycle (Mestrado em Astronomia & Astrofísica and others), and 3rd Cycle (Programa Doutoral em Astronomia and other), at the Faculdade de Ciências da U.Porto (FCUP) and students from other universities/institutes.

[1] Middle and high school teacher deployed at CAUP: Planetário do Porto – Centro Ciência Viva

Several CAUP researchers collaborate in curricular units of the 1st Cycle in Physics (Licenciatura em Física), of the 2nd Cycle (Mestrado em Astronomia & Astrofísica) and of the 3rd Cycle (Programa Doutoral em Astronomia).

The major changes in the team (researchers with a PhD) during 2024 were:

Thomas Scott	ended his contract on 21 January
Patricio Lagos	ended his contract on 27 January
Lara Sousa	ended her contract on 31 March
Abhishek Chougule	ended his contract on 31 August
Ângela Santos	ended her contract on 31 November

One other researcher with external funding initiated her activity at CAUP in 2025. One researcher also initiated in 2025 his Postdoc Grant.

UnI – Research Unit (IA-CAUP)

Research in CAUP is structured according to the organisation of the research unit **Instituto de Astrofísica e Ciências do Espaço (IA)**, into five research groups. The description below covers general activities of IA having the participation by CAUP members. The description is kept general, reflecting what has been reported by IA.

Towards the detection and characterization of other Earths

Nuno Santos - Group Leader

Activity Summary

In 2025 the team was able to lead several high impact results covering its different fields of expertise. Examples are provided in the highlight section below. Reflecting the team's international visibility and impact, we have also led the organization of a large international conference (*The Sixth Workshop on Extremely Precise Radial Velocities 6,* Porto, 200+ participants). The topic of the conference is deeply connected with one of the main scientific research focuses of the team and directly related with the scientific preparation of the PoET project.

For 2026, one of the main priorities of the team will be the exploitation of the new PoET data (also in collaboration with the stellar group in IA), as well as to the successful participation in NIRPS and CHEOPS projects. Support to all the remaining team activities that follow the defined strategic lines will continue.

One of the main risks for the team continues to be its sustainability in terms of long-term contracts for senior researchers. To mitigate this risk, an active effort will continue to support CEEC and FCT project applications, as well applications for ERC projects. The international visibility of the team will also be used to attract new researchers (and PhD students). Finally, significant efforts will be put to the organization of the *Exoplanets 6* conference (Porto), with an expected 600+ participants.

Research Scope & Strategy

The team focuses its research on tackling high impact questions such as: How diverse are planetary systems in the Galaxy? How frequent are rocky, temperate planets orbiting other Suns? Are there other habitable worlds?

To answer these state-of-the-art questions, the team's activities include:

1) the search and detailed characterization of exoplanets, including the study of their atmospheres, using state-of-the-art high-resolution spectroscopy and space-based photometric data;

2) the study of astrophysical sources of "noise" that hinder the detection and characterization of planets, as well as developing methods to correct/model them, keeping in mind the end goal of detecting and characterizing rocky planets orbiting other suns;

3) the study of the star-planet connection to better characterize planetary systems, their properties, and their formation processes;

4) the exploration of new avenues in the study of Solar System minor bodies (tracers of Solar System formation) as well as in planet atmospheres (focused on Venus, Mars, and Jupiter), aiming at understanding their dynamics and chemistry, and linking with exoplanet atmosphere studies;

5) the understanding of habitability conditions as well as the study of extremophiles, interfacing Solar System/exoplanet research with microbiology.

A significant part of this research is motivated and fostered by our leading scientific participation in different international consortia. From the ongoing projects we highlight ESA's CHEOPS mission, the NIRPS spectrograph (@ESO's 3.6m), as well as the soon-to-be-commissioned (2026) PoET telescope (entirely led by IA and funded through an ERC grant). Data from all these instruments is being used by researchers in the team to produce high impact results, as well as to support MSc and PhD thesis of a number of students. In complement, open time applications and the use of data from other collaborations (e.g. Kobe, ExoMars, Mars Express) will also be supported.

Looking ahead, these projects also serve as stepping-stones for the science opportunities raised by future projects and missions, on which the team is also deeply involved, including ESA's PLATO (launch expected in the end of 2026), ARIEL (2029), Comer Interceptor (2029), EnVision (2031), ANDES@ESO's ELT (2034) as well as, further ahead, ESO's PCS (for the ELT) or the HWO. In addition, participation in the proposal for the ESA F-Mission Walzer was also initiated and will be pursued.

One clear milestone in 2025 was the PoET project. Fully led by IA, PoET is scheduled to start operations in early 2026. In 2025, the project gathered a significant effort from the team, in particular concerning the organization of the Science Team (with more than 60 researchers worldwide) and definition of the science cases and observation plan.

These long-term projects and strategy assure continuity and allows the team to be in the forefront of planetary system's science for the next decade and beyond.

Scientific Highlights

A new step towards the modelling of stellar signatures in exoplanet research

In the era of high-resolution spectroscopy, methods for characterizing exoplanets and their atmospheres are advancing rapidly. As these techniques are refined and allow for the detection of even the most minute signals from the planet, however, the role of the host star becomes increasingly significant. Indeed, stellar signals, often dubbed as “noise”, are one important source of contamination for exoplanet research. Their modelling is critical for the detection and characterization of other planets.

In a paper led by IA researchers, the team published a new code that allows to model, with unprecedented detail, the stellar signals produced by different sources of “noise”. The new code, SOAPv4, is a new, open-source framework designed to model stellar signals and planetary transits at high spectral resolution, with the specific goal of quantifying and mitigating stellar contamination in exoplanet observations. The code was then applied to model the phase-dependent signatures on transmission spectra of exoplanets, and how these effects can bias the retrieval of planetary atmospheric properties if not properly accounted for. The results indicate that activity-induced distortions can both mimic and mask planetary features, while their chromatic and temporal behaviour offers a route to separate, at least partially, stellar and planetary signals.

Thanks to its modular and physics-based design, SOAPv4 provides a natural basis for future pipelines aiming to correct stellar contamination in transmission spectroscopy, with applications ranging from hot Jupiters to temperate terrestrial planets. The framework is being extended to ingest

dedicated solar observations from the POET solar telescope, which will be used to calibrate and test the treatment of solar-like activity patterns within the model. Looking ahead, SOAPv4 is poised to be a useful tool for planning and interpreting ultra-high-resolution observations with upcoming spectrographs such as ANDES at the ELT, where understanding stellar systematics will be crucial to unlocking the full potential of atmospheric studies.

Exoplanet habitability: linking microbiology with Astrophysics

Studying the habitability of exoplanets requires combining astrophysical constraints on planetary environments with biological limits on life. Rocky planets orbiting M dwarf stars are prime targets for exoplanet surveys, but these are characterized by intense stellar activity. Frequent flares raise concerns about surface sterilization, highlighting the need to evaluate whether habitable conditions can persist under such radiation environments.

In a paper led by IA PhD student A. Mota, the team developed models to estimate surface temperatures and flare-driven UV and X-ray radiation on exoplanets in the Proxima Centauri and TRAPPIST-1 systems. The results indicated that Proxima b and TRAPPIST-1 e are the most promising candidates for habitability, with temperatures potentially compatible with liquid water and radiation conditions that may be survivable under atmospheric or shallow subsurface shielding.

The modelled environments were then used to inform microbiology experiments testing the survival of spores of the fungus Aspergillus niger under exoplanet-like radiation. We show that these melanin-rich spores can survive UV and X-ray doses comparable to strong stellar flares, particularly when shielded by the atmosphere or thin layers of soil or water. In addition, melanin was found to significantly enhance both radiation tolerance and post-irradiation growth.

Together, these results demonstrate how integrating astrophysical modelling with experimental biology provides a more realistic framework for evaluating exoplanet habitability. This is particularly relevant for current and upcoming missions, which will increasingly characterize planets around M dwarfs but cannot directly probe biological viability. Therefore, this study helps translate astrophysical measurements into life-informed habitability constraints by linking planetary properties to experimentally tested biological responses. More broadly, it highlights that searching for life in the Universe requires an explicitly interdisciplinary approach, in which planet characterization is integrated with knowledge of the limits of life as we know it.

First results from the NIRPS spectrograph

In a series of 6 scientific articles published in the journal Astronomy & Astrophysics, the international team from the NIRPS consortium, which includes several researchers from IA, shared the first observations and first scientific results of the instrument.

NIRPS is a new high-resolution spectrograph designed to search for exoplanets and study their atmospheres. The focus of this spectrograph is the study of rocky exoplanets, the type of planets, believed to be key to deciphering planetary formation and evolution, as well as being considered the best candidates for the search for life outside the Solar System. This instrument obtains highly precise spectra in infrared wavelengths, which, in combination with those of spectrographs in the visible band, such as ESPRESSO, could provide important clues about the composition of exoplanets, and even allow the search for signs of life in their atmospheres.

One of the studies, led by IA researchers, explored the problem related with the obstacles caused by stellar activity to detect Earth-like planets using the radial velocity method. In an article, the team made use of NIRPS observations of two red dwarfs with different levels of activity and internal structure, around which exoplanets are known – Proxima Centauri and Gliese 581. The team has then shown, for the first time, that stellar activity considerably affects the spectra of red dwarfs, with hundreds of spectral lines showing distortions that vary according to the stars' rotation. These effects can hinder the detection of exoplanets using the radial velocity technique, so it is important to create new ways to correct them at the spectral level.

The first results from NIRPS in detecting and characterizing exoplanets show the great potential of this new instrument. Furthermore, the exploration of high-resolution infrared spectra allows us to test methods for detecting the atmospheres of Earth-like exoplanets orbiting other stars, a scientific leap that will be possible with the ANDES spectrograph.

From stellar formation to stellar composition

Sun-like stars can engulf planets, and such events can also leave observable chemical signatures on stellar surfaces. In a study led by a IA PhD student, the team used 1000 simulated planetary systems from the New Generation Planetary Population Synthesis (NGPPS), identifying three phases of planet engulfment during the lifetime of a planetary system: disc-driven migration, dynamical interactions, and long-term tidal decay. Furthermore, engulfment was shown to occur preferentially in systems born from massive, metal-rich protoplanetary discs, which are more likely to form giant planets that can destabilize smaller bodies.

Furthermore, by modelling stellar evolution, the team demonstrated that engulfment only produces detectable chemical changes after disc dissipation, once the stellar convective envelope thinner, and only if the engulfed material is sufficiently massive ($\gtrsim 10\,M_{\oplus}$). Accounting for the stellar internal structure and dilution processes over giga-year timescales, it was concluded that less than 20% of Sun-like stars should exhibit observable chemical evidence of planet engulfment, making such detectable signatures relatively rare.

This work studies one facet of the star-planet connection, and shows how the stellar chemical composition, which is used to infer planetary properties such as composition or internal structure of orbiting planets, is not always a reflexion of the initial protoplanetary disk's composition and can be altered by the late-stage dynamical processes and ingestion of planetary material. By doing so, it also establishes constraints for interpreting stellar abundance patterns in more evolved planetary system populations. The work strengthens the theoretical framework connecting disk properties, planet formation efficiency, migration, and system stability, demonstrating that high-metallicity, high-mass disks not only favour giant-planet formation but also influence long-term dynamical architectures through higher probabilities of engulfment events. The conclusion that observable chemical imprints are both rare and strongly dependent on timing, stellar structure, and the mass of the engulfed planet ensures that abundance-based methods for assessing planetary composition, interior structure, and potential habitability can be applied more robustly and carefully.

Consortia & Missions Scientific Participation

Consortium/Mission	Role (lead WG)	Contributions in 2025
ARIEL	Board Membership, WG lead	Co-leader of Spectroscopic Data WG, Synergy between Solar System planets' atmospheres and Exoplanets (Clara Sousa Silva, Pedro Machado)
PLATO	Board Membership, WP lead	Leading of WPs in the Plato Science Management and Ground Observing Program (S. Barros, S. Sousa, T. Campante, N. Santos, V. Adibekyan)
ANDES	Board Membership	
CHEOPS	Board Membership, WG lead	TS3 - Stellar Target Characterization; Stellar Characterization of CHEOPS targets (S. Sousa); Coordination of the Atmosphere WG of the CHEOPS consortium (O. Demangeon)
PoET	PI, WG leadership, Science Team Chair	Refinement of Science Goals and coordination of Science Team activities, leadership of Working Groups (N. Santos, A. Santos, A. Silva, W. Dethier)
Kobe	WG co-leadership	Characterization for KOBE large survey of CARMENES (A. Silva)
HRMOS Science Team	WP co-leadership	WP Exoplanets, Young Stars and Magnetic Activity (S. Sousa)

Walzer	National leadership	Leadership of the institute/national contribution in the WALTzER project, ESA F-Mission (O. Demangeon)
PCS	National leadership	Leadership of the institute/national contribution in the PCS project, ESO ELT (O. Demangeon, B. Wehbe)
HWO	Steering Committee	Steering Committee for the Living Worlds WG (C. Sousa Silva)
NIRPS	Executive Board and Science Team	Member of Executive board, Core Science Team, Science Team Collaborators (N. Santos, S. Barros, E. Cristo, E. Delgado-Mena, P. Branco, K. Al Moulla, Y. Frensch)

Thematic line meetings, Journal Clubs and other activities

- IA-planet line maintained a regular journal club and team meeting agenda (see http://planetas.iastro.pt). Team meetings and journal clubs are organized every two weeks. Meetings include a presentation of "general information", as well as a short presentation of the work being carried out by one PhD student and one researcher, followed by discussion. This format helps the whole team to be acquainted with the research that is being carried out and helps the students to develop presentation skills and identify potential problems and solutions in their research project. Journal clubs include short review of recent research papers appearing in the arXiv (in a short and dynamic way), followed by discussions. All regular team meetings and journal clubs are organized with videoconference connection, to assure a smooth participation from team members in all 3 nodes (Porto, Coimbra, and Lisboa). People in the Porto node usually attended the meetings together in the same room.
- We also organised our annual team meeting (called "2-DEMOC"). This year's event took place in Porto. Main discussions were around the organization of the team in working groups (to foster scientific discussion and interactions), the use of the limited IA funding, and the opportunities and strategy of the team for the year to come.
- Planet systems Day@IA: the organization of this meeting took place in January 2025, and the main topic for discussion was Astrobiology and the strategy of the team towards that field.
- The team was strongly engaged in the organization of two major international conferences, both hosted in Porto: *The Sixth Workshop on Extremely Precise Radial Velocities 6* (July 2025) and *Exoplanets 6* (to take place in July 2026).
- Team members actively participated in different public outreach activities, including public talks and debates in schools and online, as well as other outreach events. This included the IA summer program.

Towards a comprehensive study of stars

Tiago Campante - Group Leader

Activity Summary

In 2025, the Stellar Astrophysics Research Group at IA consolidated its scientific leadership across stellar physics, stellar populations, and Sun–heliosphere research, while strengthening its strategic positioning in upcoming ESA and ESO missions. A major achievement was the successful securing of **four highly competitive FCT CEEC contracts** by group members, significantly reinforcing the group's human resources and medium-term sustainability. In addition, **PRODEX (seed) funding was secured for the HAYDN mission** for the 2026–28 triennium, ensuring the team's continued involvement in the preparation of this proposed ESA M8 mission.

Looking ahead, the group's short- to medium-term objectives are to: (i) consolidate its international reference status in **stellar oscillations and asteroseismology**, while further promoting its research activity in **star formation**; (ii) achieve **critical mass in space weather** in terms of human resources; (iii) revitalize the **Stellar Populations research line**, with a strong focus on stellar clusters and Galactic archaeology in the

context of the TESS extended mission, PLATO complementary science, HAYDN, and HRMOS; (iv) capitalize on its involvement in the definition of major missions and instruments by securing **leadership roles in their scientific exploitation**; and (v) establish the **first Portuguese node of ESA's Space Weather Service Network**.

These goals will be pursued by leveraging the group's expertise in solar and stellar physics to take a leading role in the exploitation of **PoET data** (first light expected in 2026), and by assuming a central role in the scientific exploitation of **PLATO data**, including its complementary science (operations expected to start in 2027). The group will maintain strong engagement in upcoming ESA and ESO initiatives, notably **HAYDN** (Phase 0 candidate selection expected by Q4 2026) and **HRMOS** (forthcoming selection procedure), while actively exploring new funding opportunities for space weather research through national and European channels, including PT Space and the ERC.

Research Scope & Strategy

Our activity during 2025 was distributed across three main research lines: Sun and Heliosphere, Stellar Physics, and Stellar Populations.

Sun and Heliosphere research line

This research line focuses on studying the solar atmosphere as well as the influence of solar activity on the heliosphere and the Earth's atmosphere, also known as space weather. We continued to participate and collaborate in several national and international projects. Group members continued to lead the Portuguese participation in the SWATNet MSCA Innovative Training Network; to investigate the consequences of the rapid secular drift of the northern magnetic dip pole in the context of the PoleMotion project; to carry out the SpaDeLab (Space Debris Laboratory of the University of Coimbra) interdisciplinary project for the study of space debris; and to contribute to the definition of the scientific priorities of the PoET solar telescope (ESO) concerning solar and stellar physics.

Stellar Physics research line

This research line focuses on understanding the physical processes that govern stellar interiors as well as the mechanisms driving stellar evolution. The exploitation of asteroseismic data from TESS (NASA) was carried out within the framework of the TESS Asteroseismic Science Consortium (TASC), in which our team is deeply involved, with representation on the Steering Committee and co-leadership of one of its working groups. Furthermore, our team continued to play a leading role in preparing the stellar science component of PLATO (ESA), with responsibilities spanning the design, implementation, and validation of key modules of the Stellar Analysis System (SAS) pipeline, arising from our leadership of work packages within both the PLATO Science Management (PSM) and the PLATO Data Center (PDC). The team also continued to actively contribute to the Ariel (ESA) consortium, where we coordinate a working group responsible for determining the fundamental parameters of the mission's target stars.

Our research also included studies of low-mass stellar and substellar populations in young clusters and star-forming regions of the Milky Way, aiming to understand the main formation channels of brown dwarfs and free-floating planetary-mass objects, as well as their potential dependence on the star-forming environment. We further investigated the structure and evolution of dense, magnetized filaments and hubs in star-forming regions, focusing on how gravity, magnetic fields, and feedback regulate clustered star formation.

Stellar Populations research line

This research line focuses on the precise characterization of large ensembles of solar-type and red-giant stars, providing valuable information applicable to multiple areas of research, including Galactic archaeology and Galactic chemical evolution. We highlight the group's active involvement in upcoming instrumentation and mission initiatives. In particular, we have been playing a leading role in HRMOS (ESO) a proposed high-resolution multi-object spectrograph for the VLT, where we co-lead one of the work packages of its science team; among other science goals, HRMOS will enable detailed studies of star-disk interactions, magnetospheric accretion, and star clusters as probes of stellar mixing processes. Additionally, our team has been heavily engaged in HAYDN (ESA), a proposed ESA M8 medium-class mission designed to perform long-term, high-cadence photometry

of dense stellar fields, with one of our team members serving as the Portugal Co-PI of the HAYDN consortium.

Scientific highlights

Unravelling the complex evolution of stellar rotation and magnetism

Recent research has significantly advanced our understanding of how solar-like stars evolve, revealing that the relationship between stellar rotation and magnetic activity is far more complex than previously thought. Two new studies by our group members provide critical evidence for non-monotonic transitions in stellar evolution, specifically spin-down stalling and the "born-again" dynamo phase.

For stars in the main sequence, it was long believed that rotation and magnetic activity decreased steadily with age. However, data from the *Kepler* mission revealed an "intermediate-rotation gap", suggesting a phase of rapid evolutionary transition. Santos et al. (2025a) presented a study of the cluster NGC 6811 and identified the first clear signature of this spin-down stalling phase. Stars crossing the rotation gap exhibit enhanced magnetic activity, likely caused by the strong internal shear generated between the fast core and the slow envelope during the coupling phase. These results suggest that the impact of this transition can persist for extended periods of time.

As stars evolve off the main sequence, their changing internal structure provides further tests of magnetic braking theories. In Santos et al. (2025b), the magnetic properties of the G-type subgiant β Hydri were investigated using spectropolarimetric observations from HARPSpol, complemented by X-ray data and asteroseismic constraints from TESS. Despite having experienced weakened magnetic braking during the latter part of its main-sequence evolution, β Hydri currently hosts a substantial large-scale magnetic field and exhibits renewed magnetic activity. This supports the "born-again" dynamo scenario, in which the deepening convective envelope of subgiant stars allows large-scale dynamo action to be temporarily re-established.

Together, these works highlight that the transition from active, fast-rotating young stars to quiet, slow-rotating old stars is marked by complex periods of stalling, enhancement, and rebirth. A press release (https://divulgacao.iastro.pt/en/2025/06/20/beta-hydri-dynamo/) has been issued by IA accompanying the publication of the article containing the β Hydri results.

References:

Santos, A. R. G., Godoy-Rivera, D., Mathur, S., Breton, S. N., García, R. A., & Cunha, M. S. (2025a) "Signature of spin-down stalling in stellar magnetic activity: The case of the open cluster NGC 6811", A&A, 697, A177

Santos, A. R. G., Metcalfe, T. S., Kochukhov, O., Ayres, T. R., Gafeira, R., & Campante, T. L. (2025b) "Magnetic braking and dynamo evolution of β Hydri", A&A, 698, L23

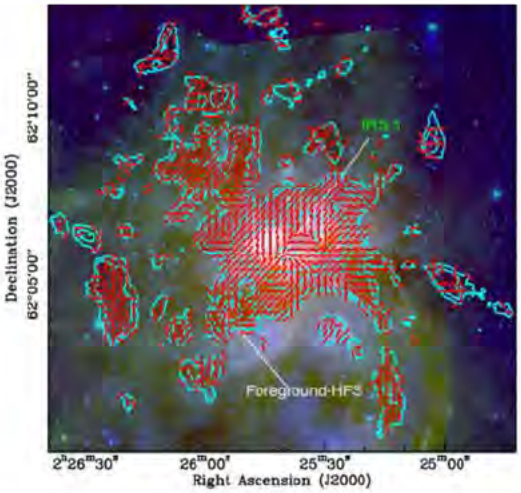
Evolution of magnetized hub-filament systems in star-forming regions

Stars and star clusters form within networks of dense filaments that channel gas into central hubs, and understanding how gravity, magnetic fields, and feedback shape these hub–filament systems is essential for explaining clustered star formation. Kumar et al. (2025) compare three well-studied, O-star-forming hub–filament systems — W3(OH), W3 Main, and S 106 — sampling an evolutionary sequence from very young to evolved, to identify observational tracers of how magnetized hubs grow and disperse as cluster formation proceeds. The authors combine JCMT/POL-2 850 μm dust polarization maps with archival infrared and radio data to trace dense gas, magnetic-field geometry, young stellar populations, H II regions, and outflows across each system.

Column-density radial profiles define elliptical hubs of ~1–1.5 pc surrounded by filaments, with two-slope power-law profiles that evolve from W3(OH) to S 106, indicating a transition from global collapse to relaxation as feedback strengthens. Filament line-mass distributions show that in the youngest region, W3(OH), hubs and filaments share a continuous, Salpeter-like high–line-mass tail, whereas in the evolved S 106 the distributions separate and the filament function flattens. Polarization measurements reveal magnetic fields that are misaligned with low-density filaments at large radii but become parallel to dense filaments near hubs, consistent with gravity-driven inflow, while outflows and radiation bubbles reshape the field along cavity walls and shells.

A key result common to all regions is the presence of "double-node" star formation within hubs, where two nearby activity peaks show different evolutionary stages, suggesting sequential star

formation may be a general feature of cluster-forming environments. Overall, the study identifies hub size, filament line-mass evolution, and feedback-driven magnetic-field restructuring as robust indicators of hub–filament system evolution, offering a coherent framework for understanding massive star and cluster assembly.



The hub-filament system in W3 Main, with plane-of-the-sky magnetic field angle shown as red lines. Figure from Kumar et al. (2025).

Reference: Kumar, M. S. N., Arzoumanian, D., Inutsuka, S., Furuya, R., & Bhadari, N. K. (2025) "Evolution of magnetized hub-filament systems: Comparing the observed properties of W3(OH), W3 Main, and S 106", A&A, 703, A74

Machine learning methods for stellar studies

Our group is developing and applying Machine Learning (ML) techniques to address key challenges in stellar and exoplanet astrophysics, particularly where traditional methods are limited by high dimensionality, degeneracies, or incomplete observational constraints. These efforts demonstrate how ML can extract physically meaningful information from complex astronomical datasets.

Neitzel et al. (2025) employ unsupervised manifold learning to identify stellar populations in the Milky Way. Applied to realistic *Gaia*-like synthetic data from cosmological simulations, this approach reveals low-dimensional representations of multidimensional chrono-chemo-kinematic spaces while making minimal assumptions about population structure. The results show that manifold learning can effectively disentangle overlapping stellar populations and provide new insights into Galactic formation and evolution under realistic observational conditions.

Another work by group members focuses on supervised ML for stellar parameter inference. Kamulali et al. (2025) developed a grid-based framework called MAISTEP, combining several tree-based algorithms (random forest, extra trees, extreme gradient boosting, and CatBoost) to estimate stellar radius, mass, and age using only atmospheric parameters and *Gaia* luminosities. Validation against high-quality asteroseismic benchmarks demonstrates accuracy comparable to seismic methods. Applying the tool to exoplanet-host stars enables robust demographic studies, confirming that hot-Jupiter hosts are statistically younger than hosts of warm and cold Jupiters.

References:

Neitzel, A. W., Campante, T. L., Bossini, D., & Miglio, A. (2025) "Dissecting stellar populations with manifold learning: I. Validation of the method on a synthetic Milky Way-like galaxy", A&A, 695, A243

Kamulali, J., Nsamba, B., Adibekyan, V., Weiss, A., Campante, T. L., & Santos, N. C. (2025) "MAISTEP: A new grid-based machine learning tool for inferring stellar parameters: I. Ages of giant planet host stars", A&A, 695, A57

Consortia & Missions Scientific Participation

Consortium/Mission	Role (lead WG)	Contributions in 2025
PoET Science Team	Ângela Santos - Science Team Chair	Coordination of PoET scientific activities.

PLATO Science Management (PSM)	Margarida Cunha - WP 124 000 Lead	Development of key modules of the stellar science pipeline for the asteroseismic inference of stellar parameters.
PLATO Data Center (PDC)	Tiago Campante - WP 374 100 Lead	Implementation of a key component of the stellar science pipeline related to the acquisition of grids of stellar evolution models.
Ariel Science Consortium	Tiago Campante - WG *Stellar Age and Mass Determination* co-Lead	Determination of the fundamental parameters of the mission's target stars.
TESS Asteroseismic Science Consortium (TASC)	Margarida Cunha - WG4 *Main Sequence AF "Classical" Pulsators* co-Chair + TASC Steering Committee member	Target selection and prioritization.
HRMOS Science Team	Sérgio Sousa - WP *Exoplanets, Young Stars and Magnetic Activity* co-Lead	Preparation of new HRMOS White Paper.
HAYDN Consortium	Margarida Cunha - Portugal Co-PI	ESA M8 Phase-1 proposal submitted.

Meetings, Journal Clubs & Training

In 2025, as in previous years, we continued to hold a series of regular group-wide meetings. These included biweekly Group Meetings, which serve as a forum for discussing both strategic decisions and day-to-day matters. Group Meetings alternated with Journal Club sessions, organized by two of our PhD students, and with Science Meetings, which provide a platform for group members to present and discuss their ongoing research. All meetings were hosted in person in Porto, with group members based in Lisbon and Coimbra participating remotely.

In parallel, subsets of group members continued to meet regularly within dedicated sub-teams. These included the ongoing Asteroseismology Team meetings, which focus on subject-specific discussion and coordination. In addition, a new series of Star Formation Team meetings was established in 2025, providing a dedicated forum for collaboration and discussion within this research area.

In May 2025, we held another edition of Stars Day in Porto. This annual (formerly biannual) in-person meeting places a strong emphasis on team building and social interaction. As part of the program, a SOAR (Strengths, Opportunities, Aspirations, and Results) analysis was conducted, during which the group's scientific and organizational strategy and future plans were discussed.

Other Activities

We operate our own Visitors Program. Listed below are the international collaborators who visited us in 2025:

1. Sergio Turrado (CAB, Spain); October 6-November 14.
2. Yaguang Li (University of Hawaii, USA); July 4.
3. Daniel Holdsworth (University of Central Lancashire, UK); June 25-27.
4. Juma Kamulali (Kyambogo University, Uganda); February 1-April 30.

In 2025, we organized the 12th Iberian Meeting on Asteroseismology (https://www.iastro.pt/research/conferences/12th-imas/), an annual forum of the Group of Iberian Asteroseismologists (GIA). The meeting brought together researchers from Portugal and Spain to discuss recent advances in asteroseismology, coordinate efforts in preparation for forthcoming space- and ground-based missions and strengthen existing and new collaborations. Particular emphasis was placed on community building, the training of early-career researchers, and reinforcing the role of the Iberian community in international asteroseismology initiatives. In addition, group members contributed to the Scientific Organizing Committees of international meetings, including the EAS Symposium S9 *Stellar Ages*

Across the Cosmos: Unveiling the Chronology of the Universe and the conference *Exploring Star–Planet–Disk Connections*, underscoring their active engagement in the broader international community.

The group website (https://estrelas.iastro.pt/en/) is regularly maintained and provides up-to-date information on the group's research, activities (including outreach), and recent developments.

The assembly history of galaxies resolved in space and time

Polychronis Papaderos - Group Leader

Activity Summary

In 2025, the Group successfully pursued its scientific strategy, achieving major advances in studies of galaxy evolution and the growth of super-massive black holes (SMBHs) and their impact on galaxy assembly. Building on this strategy, which includes the systematic exploration of galaxies at cosmic noon with MOONS@VLT and Euclid, and SMBH growth across cosmic time with EMU and JWST—the Group developed new spectroscopic diagnostics for galaxy classification at intermediate redshift and refined machine-learning tools to identify emission-line galaxies, including Lyman-α emitters and high-z AGN. It led efforts toward national participation in ESA's NewAthena and ARRAKIHS missions and in ESO's BlueMUSE and MOSAIC integral-field spectroscopy instruments, secured two exploratory FCT R&D projects, strengthened links with non-academic partners, and co-organized one international and one national conference. The recruitment of two permanent staff members ensured continuity in MOONS and SMBH studies, but additional expertise is needed for spatially resolved analyses using photometric and IFS data. Accordingly, the Group will prioritize external funding through FCT and EU programs, as well as joint applications with industry.

Research Scope & Strategy

The activities of the Group "The assembly history of galaxies resolved in space and time" focus on two complementary themes: the build-up of galaxies across cosmic time and the genesis and growth of SMBHs and their impact on galaxy evolution.

These goals are pursued by a team of 11 researchers, 16 collaborators, and 11 students, supported by IA's leadership roles in major ESO instrument consortia (MOONS@VLT, BlueMUSE@VLT, MOSAIC@ELT) and key ESA missions (Euclid, ARRAKIHS, NewAthena), as well as by the development of advanced computational tools for multi-wavelength data analysis of nearby and distant galaxies.

SMBH growth and AGN activity are studied from the earliest epochs to the local Universe. At high redshift, the Group investigates the emergence of the first powerful AGN using sub-mm observations with IRAM and ALMA, and by post-processing cosmological simulations to predict the detectability of early SMBHs at X-ray and radio wavelengths. Building on its multi-wavelength expertise, the Group has developed new diagnostics to identify early AGN during the Epoch of Reionization. It also plays a leading role in ASKAP's Evolutionary Map of the Universe survey through the IA-led Key Science Project "Radio AGN in the EoR" and is represented at Board and Science Team level in ESA's NewAthena mission.

At low and intermediate redshift, AGN are studied primarily with MUSE at the VLT, with emphasis on quasars, their extended Lyman-α halos, and new diagnostics to constrain nebular excitation and physical conditions. These studies are supported by comparisons with cosmological simulations including AGN feedback and by IA's spectral synthesis code FADO. Together with other IA-developed tools, FADO is being used to prepare for the scientific exploitation of MOONS, which is expected to begin operations in late 2026. In 2025, the Group played a central role in preparing guaranteed-time observations and in defining data-reduction and analysis strategies. IA researchers hold major roles in several MOONS Science and Technical Working Groups, including co-leadership of the AGN and Galaxy Morphology WG and Technical WG-1, and active participation in WGs on the ISM, passive galaxies, environments, large-scale structure, high-z Universe and EoR, clusters and protoclusters, mock catalogues, redshift and parameter estimation, and environmental metrics.

A further core activity of the Group is the spatially resolved study of galaxies using IFS and deep multi-band photometry. Using MUSE, CALIFA, and MaNGA, together with HST, JWST, and Euclid data, team members address key questions on bulge assembly and inside-out star formation quenching, the propagation of starbursts and feedback, the escape of Lyman-α and Lyman-continuum radiation, age and metallicity

patterns, environmental processes such as ram-pressure stripping and cooling flows in clusters, and the nature of ultra-faint galaxies. These efforts are complemented by the development of machine-learning tools for identifying high-z AGN and characterizing galaxies in the Euclid Galaxy Legacy Survey, co-led by IA.

Scientific Highlights

Unveiling faint X-ray AGN populations in the NewAthena era: insights from cosmological simulations

The European Space Agency's next-generation X-ray observatory, NewAthena, is poised to transform our view of the early Universe and the growth of SMBHs. Scheduled for launch in the late 2030s, NewAthena will offer an unparalleled combination of sensitivity, wide-field imaging, and high-energy X-ray capabilities that far surpass those of existing telescopes like Chandra and XMM-Newton. Team member Nuno Covas used advanced cosmological simulations to model the performance of NewAthena in detecting faint, distant active galactic nuclei (AGN), which are powered by SMBHs accreting matter. This study (Covas et al. 2025, [2a]; see also [2b]), based on the IllustrisTNG cosmological framework, predicted that NewAthena could detect around 250,000 AGN over a 10 square-degree survey. Importantly, this study showed that NewAthena is expected to detect more than 20,000 AGN from when the Universe was under 2 billion years old, including ~35 from the Epoch of Reionization (when the Universe was under 1 billion years old)—an era that has never before been statistically explored in X-rays. The simulations conducted by the IA team also incorporate recent findings from the James Webb Space Telescope (JWST), suggesting that the early Universe contained many actively growing black holes that have so far eluded detection. NewAthena's ability to find such "hidden" AGN at extreme distances will be revolutionary for understanding how the first SMBHs formed and grew, and how they influenced their host galaxies. The mission is currently in development and expected to be officially adopted by ESA in 2027, with launch targeted for 2037. Portuguese researchers and institutions are deeply involved in both the scientific planning and the technological development of NewAthena, including contributions to its Wide Field Imager (WFI) instrument. Their participation reflects Portugal's growing role in major ESA astrophysics missions and supports the training of the next generation of X-ray astronomers who will exploit NewAthena's capabilities.

[2a] Covas, N., Matute, I., Amarantidis, S., Afonso, J., .., Pappalardo, C., Carvajal, R., Papaderos, P. 2025, MNRAS 541, 29, "**Unveiling faint X-ray AGN populations in the NewAthena era: insights from cosmological simulations"**

[2b] https://divulgacao.iastro.pt/pt/2025/10/21/newathena/

Development of novel machine learning tools for the identification of Lyman-α emitting galaxies

A study conducted by the IA team [3] introduced a new machine-learning (ML) method designed to identify Lyman-α emitting galaxies (LAEs) using *broadband photometry* instead of traditional narrowband (NB) imaging or blind spectroscopy, which are limited in redshift range coverage and telescope time efficiency. LAEs are key to understanding galaxy evolution at high redshifts because of their strong ionizing photon production, compact sizes, and low stellar masses. The IA researchers used samples from the COSMOS2020 and SC4K catalogs to construct balanced training datasets with both known LAEs and non-LAEs (nLAEs), matching them in redshift and brightness distributions to avoid bias. They trained three gradient-boosting machine-learning models (LightGBM, XGBoost, and CatBoost) on *optical and near-infrared broadband photometry* to distinguish LAEs from other star-forming galaxies. Gradient boosting leverages sequentially built decision trees to improve overall classification performance by correcting errors from previous trees, capturing complex relationships in the data. Across these models, the approach achieved high classification performance with F1-scores ~87% on test sets, significantly above baseline expectations. When applied to the COSMOS field, the method identified about 7,000 LAE candidates with unanimous predictions across all models, more than *doubling* the number identified compared with the SC4K narrowband survey alone. Moreover, 60 of these predicted LAE candidates were spectroscopically confirmed using existing catalogs, validating the approach's reliability. The study also tests model robustness under perturbed photometry and explores how different broadband filter sets—mimicking upcoming surveys like Euclid and LSST—impact classification performance. Models using LSST-like filters maintained high performance, while those matched to Euclid's more limited

filter coverage showed reduced accuracy—indicating that broadband wavelength coverage influences LAE detection efficiency. Overall, this work demonstrates that machine-learning classifiers trained on broadband data can efficiently preselect LAE candidates over large sky areas, *paving the way for application to next-generation large surveys* that will produce massive photometric datasets, ultimately improving our census of high-redshift galaxies and advancing studies of early universe galaxy formation.

[3] Vale, A., Paulino-Afonso, A., Humphrey, A., Cunha, P.A.C., Ribeiro, B., Cerqueira, B., Carvajal, R., Fonseca, J. 2025, A&A 701, 223 "A gradient boosting and broadband approach to finding Lyman-α emitting galaxies beyond narrowband surveys"

Development of new spectroscopic diagnostics for galaxy classification for galaxies at cosmic noon with MOONS

IA researchers have developed a new spectroscopic classification method for galaxies at intermediate redshifts (1.5-2.5), an epoch that is crucial for understanding galaxy evolution but challenging for traditional diagnostics. At these redshifts, commonly used BPT (Baldwin-Phillips-Terlevich) diagrams, which distinguish star-forming galaxies from those hosting AGN, become impractical because key emission lines (e.g., Hα) shift beyond the optical range of ground-based spectrographs. To overcome this limitation, the IA team developed the OB-I diagnostic diagram, which combines the equivalent width of Hβ with the emission-line ratio [OIII]λ5007/Hβ, requiring only two optical emission lines. Their study assembled a diverse dataset from spectroscopic surveys spanning $0 < z < 2.7$, including SDSS, LEGA-C, VANDELS, JADES, 3D-HST, and MOSDEF, to test how well the OB-I diagram separates different galaxy populations across cosmic time.

In the local Universe ($z < 0.4$), the OB-I diagram effectively distinguishes AGN-dominated galaxies from a mixed population where star formation and AGN contributions are both present. By comparison with classical BPT classifications and theoretical models, the IA researchers demonstrate that a semi-empirical boundary in this two-line space can isolate pure star-forming systems from those with significant AGN influence.

At higher redshifts, the method still recovers about half of the AGNs identified by other schemes, suggesting that the OB-I diagram is more resilient to the redshift-driven line shift that affects most optical classification schemes. This robustness stems from its reliance on emission lines that remain accessible in the optical window over a wide redshift range.

The IA team demonstrated that the OB-I diagram provides a valuable complementary classifier for large spectroscopic surveys of intermediate-redshift galaxies, such as the MOONRISE survey to be carried out with MOONS starting in 2026. MOONS, co-led by IA, was shipped to Paranal in December 2025 [5] and will play a key role in advancing spectroscopic studies at cosmic noon.

[4] Muñoz Santos, D., Pappalardo, C., Miranda, H., Afonso, J., Matute, I., Carvajal, R., Lobo, C., Lagos, P., Papaderos, P., Paulino-Afonso, A., Chougule, A., Barbosa, D., Lourenço, B. 2025, A&A 701, 271: "Through the fog: A complementary optical galaxy classification scheme for intermediate redshifts"

[5] https://divulgacao.iastro.pt/pt/2025/12/23/moons/

Consortia & Missions Scientific Participation

The Group assumes leading roles or is deeply involved in several instrument consortia that are central to its scientific strategy. Within **MOONS**, co-led by team member J. Afonso, the Group leads or co-leads WG5 (AGN; J. Afonso), TE-WG1 (Input Catalogues; C. Pappalardo), and TE-WG10 (Morphology; A. Paulino-Afonso). The Group also holds Board-level representation in the **MOSAIC** (J. Afonso), **BlueMUSE** (P. Papaderos), and **ARRAKIHS** (P. Papaderos). In the case of ARRAKIHS, the Group additionally coordinates the IOSDC activities. Team members also participate in the **WST** consortium (A. Paulino-Afonso, C. Pappalardo) and the **Euclid** consortium.

Consortium/Mission	Role (lead WG)	Contributions in YYYY
MOONS	Co-PI, WG5 (AGN) Lead; TE-WG1 and TE-WG10 (Co-lead)	Definition and optimization of the MOONRISE survey strategy; definition of AGN samples and observation priorities

NewAthena	WFI Board, WFI Science Team	Definition of Scientific Priorities and observing strategies
BlueMUSE	Board Member	Definition of scientific priorities and observing strategies
MOSAIC	Board Member	Preparation of Science Reference Plan and Red Book
ARRAKIHS	Board Member; IOSDC coordination	Coordination and execution of scientific and technical activities
EMU	CoI and AGN SWG Lead	Coordination of AGN-related science activities
SKA	Core Member, Continuum Science WG	Core membership of the SKA SWG: Continuum Science
RAEGE	Vice-President, Scientific and Technical Advisory Committee	Evaluation and advisory role to the RAEGE's scientific and technical strategy and activities

Meetings, Journal Clubs & Training:

Throughout 2025, the team maintained an active schedule with weekly briefings dedicated to discussing ongoing scientific work. In parallel, the regular weekly Journal Clubs continued, providing a forum to review and debate recent results, mostly from outside IA. The team's dynamism was also reflected in the co-organization of the National Astronomy and Astrophysics Meeting (ENAA XXXV; Lisbon, 10-12 September; C. Lobo, SOC), which gathered 117 participants, and the international conference "Escape of Lyman Radiation from Galactic Labyrinths" (Crete, 8–11 April; P. Papaderos and J. Brinchmann, SOC), attended by more than 80 researchers. In addition, the team organized a two-day internal workshop (8-9 September 2025) focused on ongoing research activities and the discussion of key scientific goals for the coming years.

Other Activities

The team has also been actively engaged in a broad range of scientific and training activities. Notable contributions include the invited oral presentation *"The Road to Identifying the Earliest Radio-Powerful AGN with the SKA"* delivered by J. Afonso at the SKA Science Meeting 2025 (Görlitz, Germany, 16–20 June 2025). Five team members participated in the MOONS Science Team Meeting (IASF Milan, 18–20 February 2025), reflecting the Group's leadership roles in three MOONS Working Groups. In addition, J. Afonso, I. Matute, and N. Covas took part in the NewAthena/WFI consortium meetings held at MPE (Germany, 16–18 June 2025) and DTU (Denmark, 3 December 2025), while P. Papaderos participated in the ARRAKIHS consortium meeting at the University of Vienna (22–26 April 2025).

The Group has also invested strongly in high-level education and training in radio astronomy, with the aim of fostering the next generation of SKA researchers in Portugal. From 8–11 May 2025, the team conducted an observing session with the RAEGE radio telescope in Santa Maria (Azores), involving three PhD students and six MSc students from the University of Lisbon.

Unveiling the dynamics of the Universe

Tiago Barreiro (IA-Lisboa) - Group Leader

Activity Summary

In 2025, the Cosmology Group consolidated its leadership in testing the foundations of the standard cosmological model through coordinated contributions to major international missions and targeted

theoretical advances. The group played a strategic role in the scientific consolidation of the **Euclid** mission, contributing to the flagship mission paper and to key preparation studies enabling consistency tests of ΛCDM, homogeneity, and extensions beyond standard gravity. In parallel, the group delivered major advances in **gravitational-wave cosmology**, including realistic modelling of stochastic backgrounds from cosmic strings relevant for **LISA**, and achieved a milestone in **21 cm cosmology** with the first detection of the HI power spectrum using MeerKLASS data, establishing a pathfinder for **SKAO** science. Continued exploitation of **ESPRESSO** data and preparation for **ANDES** reinforced the group's long-term programme on fundamental constants and redshift-drift cosmology.

Snapshot: 2025 outputs include **a large number of refereed publications**, leadership roles in Euclid, LISA, SKAO and ESPRESSO/ANDES, and multiple completed PhD and MSc theses across all nodes.

Priorities for 2026:

(i) scientific exploitation of early Euclid data releases for cosmological consistency and homogeneity tests;
(ii) consolidation of analysis pipelines and science cases for LISA-era gravitational-wave cosmology;
(iii) preparation of SKAO cosmology analyses building on MeerKLASS pathfinder results.

Risk & mitigation: the increasing scale and complexity of mission activities may place pressure on coordination and response times. This risk is mitigated through prioritisation of IA-led science cases, strengthened cross-node organisation, and, where feasible, reinforcement of effort through students, early-career researchers, and externally funded projects.

Research Scope & Strategy

The Cosmology Group's activity is focused on testing the validity of the standard cosmological model and identifying potential signatures of new physics in the evolution of the Universe. Core scientific questions include the nature of dark energy and gravity, the validity of homogeneity and isotropy, the physics of the early Universe, and the use of novel observational probes to test fundamental assumptions of cosmology.

The group's strategy combines theoretical development, numerical modelling, and the scientific exploitation of large observational datasets. A central pillar of this activity is participation in major international missions and surveys, particularly **Euclid**, **LISA**, **SKAO**, **ESPRESSO**, and **ANDES**, where the group contributes to mission-level science preparation, interpretation frameworks, and consistency testing. Strong emphasis is placed on theory-driven approaches that enable these facilities to probe extensions beyond ΛCDM, including modified gravity, non-standard dark energy models, and topological defects.

The group maintains close links with other IA research areas, particularly through shared methodologies in data analysis, simulations, and fundamental physics. This integrated approach ensures that cosmological interpretation remains robust, forward-looking, and closely aligned with the capabilities of current and next-generation observational facilities.

Scientific Highlights

Euclid: foundational mission science and IA-led tests of cosmological consistency

In 2025, the group made major contributions to the scientific consolidation and exploitation of the Euclid mission, spanning mission-level reference work and targeted studies aimed at testing the foundations of the standard cosmological model. Group members participated in the flagship *Euclid on Sky* papers, which establishes the definitive description of the spacecraft, instruments, survey strategy, and scientific objectives following launch and early operations, and which has rapidly become a cornerstone reference for the community.

Building on this foundation, the group contributed to a focused set of Euclid preparation studies enabling cosmological consistency and extension tests, including sensitivity to non-standard particle physics, simulations and forecasts beyond ΛCDM, and the development of clustering estimators based on angular power spectra from discrete observations. Together, these works define the methodological framework required to confront Euclid data with extended cosmological models and to test assumptions such as homogeneity, isotropy, and the validity of General Relativity on cosmological scales.

References:

Euclid Collaboration, "Euclid I. Overview of the Euclid mission", Astronomy & Astrophysics 697, A1 (2025). http://doi.org/10.1051/0004-6361/202450810

Tessore et al., "Euclid preparation LIX. Angular power spectra from discrete observations", Astronomy & Astrophysics 694, A141 (2025). http://doi.org/10.1051/0004-6361/202452018

Koyama et al., "Euclid preparation LXXI. Constraints on f(R) models from the photometric primary probes", Astronomy & Astrophysics 698, A233 (2025). http://doi.org/10.1051/0004-361/202452184

Gravitational-wave cosmology with LISA: cosmic strings and the stochastic background

The group achieved major advances in modelling and forecasting stochastic gravitational-wave backgrounds generated by topological defects, with particular emphasis on cosmic strings in non-standard scenarios. A key result was the first detailed and realistic characterisation of the gravitational-wave background produced by superconducting cosmic strings across the LISA sensitivity band. This work was closely connected to the extension of template banks to include phenomenologically rich string models beyond minimal assumptions.

These developments strengthen LISA's capability to probe early-Universe physics and fundamental interactions at energy scales far beyond those accessible in terrestrial experiments. The group's sustained leadership in this area reinforces its central role within the LISA Consortium, particularly in cosmology and fundamental physics activities.

Reference:

Rybak, I. Y. & Sousa, L., "Stochastic gravitational wave background from chiral superconducting cosmic strings", Physical Review D 111, 083502 (2025). http://doi.org/10.1103/PhysRevD.111.083502

21 cm cosmology with MeerKLASS and SKAO: first detection of the HI power spectrum

A major observational milestone was reached in 2025 with the first detection of the neutral hydrogen power spectrum using single-dish intensity-mapping observations. This achievement followed extensive work on calibration strategies, foreground mitigation, and end-to-end simulations within the MeerKLASS collaboration, together with the development of robust analysis pipelines tailored to 21 cm cosmology.

This result demonstrates the maturity of intensity mapping as a competitive probe of large-scale structure and establishes a critical pathfinder for future SKAO surveys. By combining methodological development with observational validation, the group helped lay the groundwork for precision cosmology with next-generation radio facilities.

References:

Barberi-Squarotti, M. et al., "MeerKLASS L-band deep-field intensity maps: entering the HI dominated regime", Monthly Notices of the Royal Astronomical Society 537, 3632 (2025). https://doi.org/10.1093/mnras/staf195

Chen, Z. et al., "Emission-line stacking of 21 cm intensity maps with MeerKLASS: Inference pipeline and application to the L-band deep-field data", The Astrophysical Journal Supplement Series 279, 19 (2025). http://doi.org/10.3847/1538-4365/add897

Consortia & Missions Scientific Participation

Euclid (ESA)

Roles: Participation in Theory and cosmology-related Science Working Groups; leadership in the Survey Operations Support Team; membership of the Euclid Science Team; participation in the Euclid Consortium Board and national coordination structures.

Contributions: Flagship mission paper; preparation studies enabling cosmological consistency and extension tests; simulations and clustering methodologies; preparation of early data releases.

LISA (ESA)

Roles: Core consortium membership; coordination of work packages on cosmic-string signals; participation in Cosmology and Fundamental Physics Working Groups; Council-level

representation.
Contributions: Modelling and forecasting of stochastic gravitational-wave backgrounds; development of non-standard template banks.

SKAO / MeerKLASS

Roles: Leadership roles within MeerKLASS and the SKAO Cosmology Science Working Group. *Contributions:* End-to-end intensity-mapping pipelines; first HI power-spectrum detection; forecasts and simulations for future SKAO surveys.

ESPRESSO / ANDES (ESO)

Roles: Participation in ESPRESSO science activities; involvement in ANDES scientific preparation. *Contributions:* Analysis of spectroscopic data for tests of fundamental constants and cosmological probes; forecasting of ANDES capabilities.

Meetings & Journal Clubs

The Cosmology Group maintained a regular programme of internal scientific meetings aimed at coordination and critical discussion across all nodes. A **weekly group meeting and journal club ("Cosmoclub")** was held throughout the year in hybrid format, focusing on recent literature, progress updates, and coordination of mission-related activities.

In 2025, a **new student seminar series** was introduced, providing a dedicated forum for PhD and MSc students to present their work and receive feedback from the full group. A total of **five student seminars** were held during the year. The group also organised dedicated internal in-person meetings to review scientific progress and plan future activities, strengthening collaboration between nodes.

Other activities

Members of the Cosmology Group were actively involved in public outreach throughout 2025. A distinctive activity was *RUÍDO*, a science-communication performance on gravitational waves developed and performed by **Lara Sousa**, combining scientific content with artistic expression. Group members also contributed to public talks, media engagements, and outreach initiatives associated with major missions such as Euclid and LISA.

Instrumentation and Systems

Alexandre Cabral (IA-Lisboa) - Group Leader

Activity Summary

For the Astronomical Instrumentation and Systems Group (AISG) 2025 continues with a very intense level of activity, sometimes above what our human resources can cope with, in great part due to the way several project schedule change.

As seen in this report, there was a significant progress during this year, achieving some important milestones in several project and starting promising future ones.

During 2025, the following instruments had engineering and implementation activities at IA:

- For the European Southern Observatory (ESO): MOONS, ANDES, BlueMUSE, PoET, RISTRETTO and PCS.
- For the European Space Agency (ESA): EUCLID, CHEOPS, PLATO, ARIEL and Quantum Comm.

Currently the AISG participates in a considerable number of projects, involving all its human resources. This includes not only the technical design of the instruments themselves but also the respective science exploration of the collected data through big collaboration projects such as consortiums and surveys. Its importance stems from the need to secure privileged access to existing and future facilities of the European

Organization for Astronomical Research in the Southern Hemisphere (ESO) and of the European Space Agency (ESA) and to contribute to the long-term development of Astronomy in Portugal.

Research Scope & Strategy

In terms of themes of research, supported by background expertise in Astronomy Instruments / Space missions and consolidated by the work PhD students supervised by AISG researchers, the team is explored:

a) Stabilization of calibration light sources for High Accuracy Photometry Instruments resulting from research and develop a device that senses the light source fluctuations and modulates the beam, both in flux and in spectra, to produce a sufficiently stable source, a truly impressive challenge when stabilization levels of few ppm are required over long periods of observation.
b) Development of a solar telescope that will allow the detail study of the Sun (using it a proxy to understand the sources of noise that affect the observations of other stars). For that, it is fundamental to be able to obtain disk-resolved, HR spectra, opening a whole new path for the detection and characterization of Earth-like planets orbiting other Suns. Implementation of seeing measurement techniques for daytime seeing for solar observations.
c) Development of miniaturized Cross dispersed echelle spectrographs operating in the VIS and UV with the Size Weight and Power (SWaP) requirements for a SmallSat solution and the required spectral resolution to allow the study of this less explored spectral range.
d) Study of space debris detection algorithms in a standalone platform, with the goal to implement and test a star tracker that can be used for space debris detection. The methodological approach consists of selecting the most appropriate debris detection algorithms, adding automatic photometry measurements, developing a standalone platform, implementing the algorithms in the platform, selecting the low-cost materials capable of withstanding the harsh space environment, and optimizing the algorithms to work in different scenarios.
e) Development of on-sky closed loop for Atmospheric Dispersion Correction (ADC) to reach the few milli-arcseconds residuals level, a top-level requirement for RISTRETTO (ESO-VLT).

Ongoing Programmes

MOONS (ESO)

The Multi-Object Optical and Near-infrared Spectrograph (MOONS) is a future third-generation instrument for the Very Large Telescope (VLT) to have first light by 2026. It matches an enormous multiplexing capability, reaching up to 1000 positions being spectroscopically observed at the same time over a single telescope pointing, to the grasp of the 8.2m VLT, making it a unique instrument for deep galaxy surveys.

The subsystems under IA responsibility are the MOONS Rotating Front End (RFE) and the Field Corrector (1 m diameter set of two lenses).

In 2025, IA followed up all the tests and preparations done to reach the commissioning of the instrument scheduled in 2026.

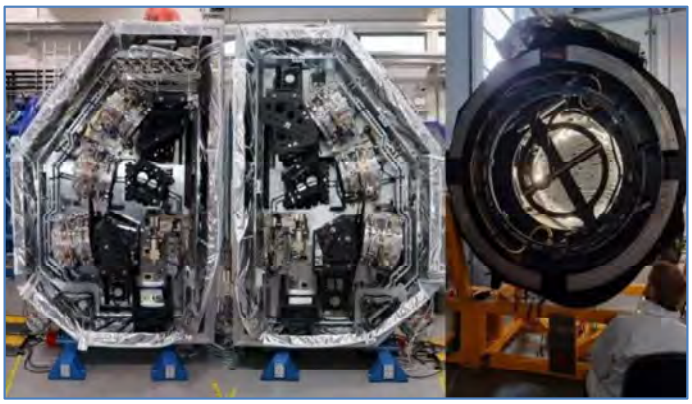


Figure 1 The ESO MOONS Instrument with its Spectrograph and the RFE

ANDES (ESO)

ANDES, formerly known as HIRES, is the project for a high-resolution spectrograph to be installed at the ESO E-ELT telescope. The concept of ANDES is being developed by a consortium that comprises several institutes in different European countries, as well as USA, Canada, Brazil and Chile. The Portuguese participation in this consortium is done through IA that is leading the "front end" subsystem component of the instrument, the data reduction and analysis software, the software system architecture, and the science drivers for the project. The group also participates in the management of the consortium, having several key persons.

In 2025, the team participated in several crucial meetings related to ANDES, that led to internal Change Requests that removed the K-band from the seeing limited arms, and the inclusion of an absorption cell for calibration. These accepted requests led to structural changes of the FE design that is now being finalized to be presented at the system PDR in 2026 (around May-June).

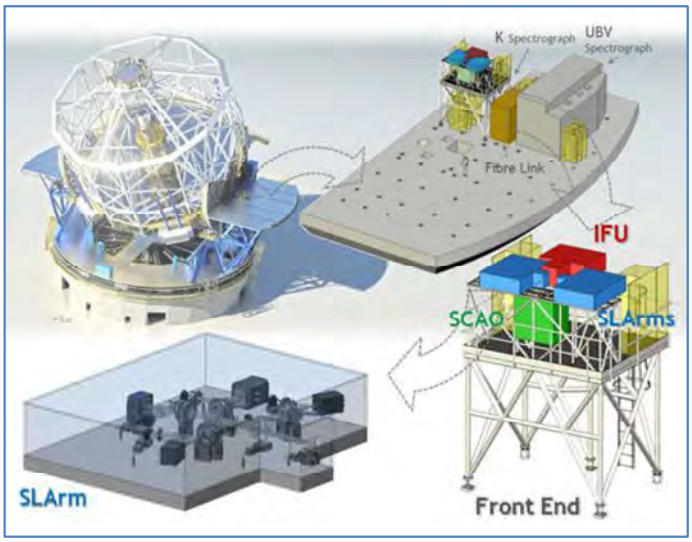


Figure 2 ANDES, with its Front End, at the ESO Extremely Large Telescope

PoET (ESO)

The detection and characterisation of other Earths, planets with the physical conditions to hold liquid water and thus potential life-sustaining environments, is a bold objective of present-day astrophysics. This quest is however severely challenged by astrophysical "noise" from the host stars. To approach this problem, we started in 2022 a new project to build a dedicated facility, the Paranal solar Espresso Telescope (PoET). This telescope will be linked to the ESPRESSO spectrograph (ESO) and allow to acquire simultaneously disk-integrated (sun-as-a-star) and arcsecond level disk-resolved observations of the Sun at a spectral resolution R~200000. The project is funded by the European Union (ERC, FIERCE, 101052347). And it is a Portuguese project.

During 2025, the team was busy doing all the required tests for the PoET front-end and pointing telescope in the laboratory. In August 2025 the team travelled to Italy to test the telescope (for acceptance) and the mechanical connection to the front end at Officina Stellare. The instrument (along with the telescope) was packed and sent for shipping (expected delivery in Chile is beginning of February 2026). The team also prepared the commissioning plan that has been approved by ESO (to be commissioned in March 2026). The seeing measurement device was also commissioned and tested against another similar instrument in La Palma, Spain (end of July 2025).

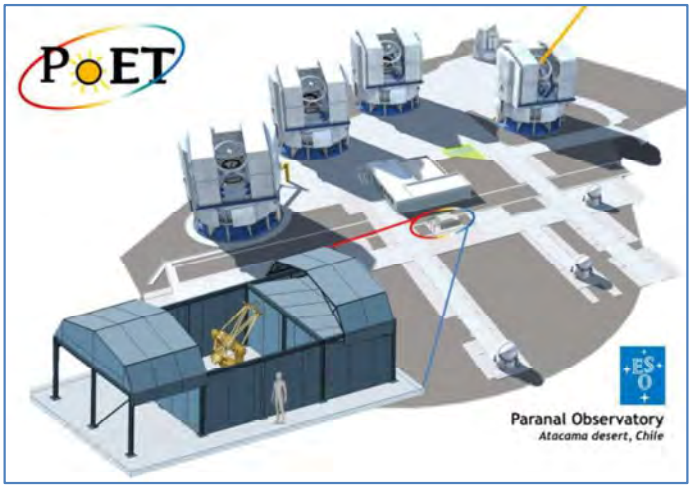


Figure 3 PoET at the ESO Paranal Observatory in Chile

BlueMUSE (ESO)

ESO-BLueMUSE instrument, is a blue-optimized, medium spectral resolution, panoramic integral field spectrograph based on the MUSE instrument, proposed for the Very Large Telescope (installed at Nasmith platform level).

With an optimized transmission down to 350 nm, BlueMUSE builds upon the heritage of MUSE but includes both obvious and novel improvements (e.g., improved stability with better temperature control and automated alignment processes). Along with all the core subsystems supporting the increased performance of BlueMUSE, the instrument shall be managed at hardware and software level according to the new standards currently in use at the VLT. Both the Instrument Controle Electronics and Instrument control Software subsystems will be of the responsibility of IA teams.

The activity of IA in this project during the present reporting period were focused on studies and pre-design of the hardware and software control solutions for the instrument, which were included in the Phase A report presented to ESO at the end of 2025. The Phase A report presented by the consortium was approved by ESO, initiating the activities towards the preliminary design milestone.

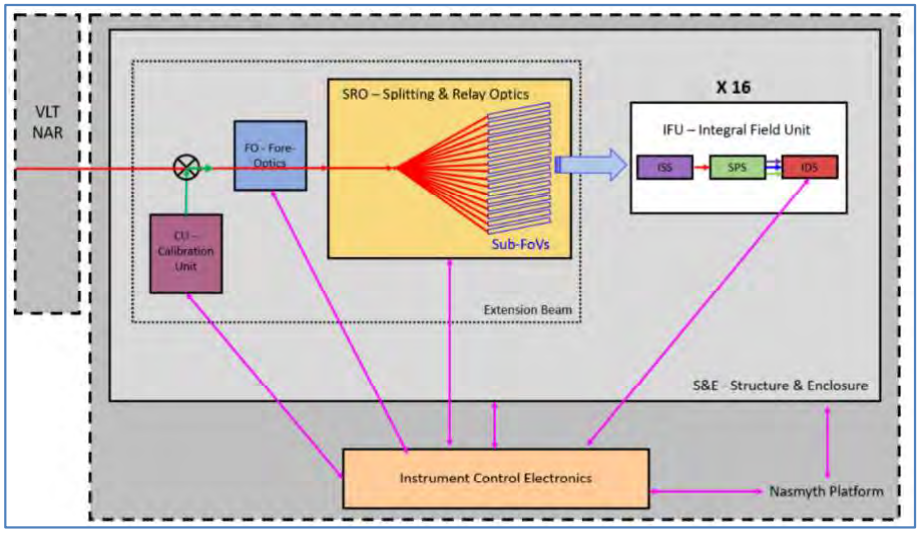


Figure 4 BlueMUSE top level Block Diagram

RISTRETTO and PCS (ESO)

These are two similar projects for ESO were our activities started in the end of 2024. In the context of RISTRETTO (a high-resolution spectrograph equipped with extreme adaptive optics) a new visitor instrument at ESO, led by the Geneva University, the IA Instrumentation team is leading the

work package related to the ADC where residuals at the level of sub-mas are requested. RISTRETTO is now in the design phase, where we participated (remotely) in a consortium meeting in October 2024 (were IA officially entered in the consortium).

RISTRETTO is considered as a pathfinder instrument for PCS, the Planetary Camera and Spectrograph (an ESO led instrument for the ELT), where the IA Instrumentation team is leading the work package related to the ADC. In 2025, the team advanced the ADC closed-loop concept and submitted the required documentation in preparation for the System Architecture Review of RISTRETTO (February 2026).



HRMOS

HRMOS - High Resolution Multi Object Spectrograph is an instrument that is being proposed for ESO VLT in the framework of the new instrumentation expected for the decade 2030s. The key science areas that will be addressed include Nucleocosmochronology, Galactic Science, Dwarf galaxies and Local Group, Star clusters and Stellar astrophysics, Exoplanets in crowded environments, and young stars. The preliminary designs points for spectrograph covering significant wavelength regions in the bands U, V, and R, reaching a resolution of 80000 with the multiplexing of 50-100 stars simultaneously.

During 2025, we continued to work within the HRMOS consortium on the instrument design, its scientific motivation, and the revision of the second version of the White Paper, which is scheduled for publication in early 2026. We remained actively involved to lead the work package dedicated to the instrument's data-reduction software and may also contribute to a work package within the Front-End subsystem.

EUCLID (ESA)

Euclid is ESA's mission dedicated to the exploration of the dark universe through the measurement of the properties of the cosmological large-scale structure. IA is strongly involved in this mission, leading the survey operations support team (SOST), and participating in the consortium board, in the consortium coordination group, in the publication groups, in various science working groups and, since 2015, in the science team.

In 2025, IA's Instrumentation and Systems Group continued its long-standing participation in the preparation of the Survey Design, focusing on the development of the ECTile software. This software computes the mission's Reference Survey Definition (RSD), i.e., it produces schedules of the Euclid Deep and Wide surveys, including implementation of all calibrations, compliant with all constraints and requirements. The IA-computed reference survey is the basis of the operational survey to be executed by the Euclid satellite during the nominal science observations phase (NSOP).

Three Reference Surveys were computed by IA during 2025. The first, RSD2025A, was delivered in January to begin operating at the end of February. It implemented the most recent calibration map, added a slot of 28h for a galactic survey and, for the first time, included re-scheduling of previously failed or skipped observations. It also included optimisations for the footprint of the data release DR1 — planned for October 2026. The second, RSD2025B, was delivered in July to begin operating in October. This one was computed by applying minimal changes to the previous survey, changing a few of the PSF calibration fields and keeping the rest of the structure intact. The third, RSD2026A, was delivered in November to begin operating in February 2026. Similar to the previous surveys, this one also implemented many updates to the calibration map, implemented a long list of re-observations, a new cadence for orbital maintenance and, most importantly, an optimisation of the wide survey footprint already in preparation of the data release DR2 - planned for 2028. The time-

wise generation of surveys is a crucial capability for EUCLID, allowing the survey to adapt to the ever changing and unforeseen needs of the mission.

In terms of funding, the development of the new version of ECTile was made in the framework of a specific contract with ESA, and SOST is funded through PRODEX.

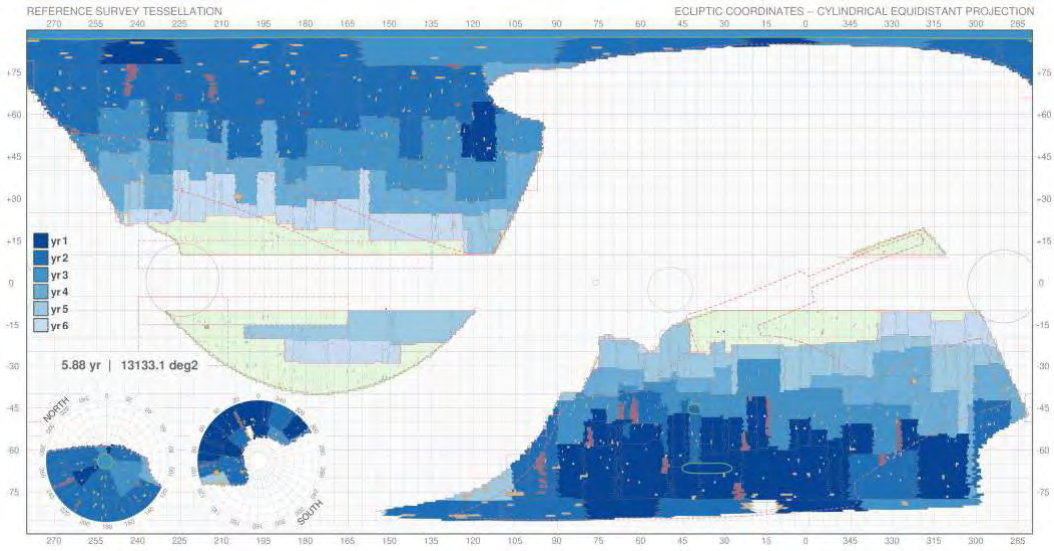


Figure 5 Footprint of RSD2026A

CHEOPS (ESA)

The Characterising Exoplanet Satellite (CHEOPS) is the first mission dedicated to search for transits of exoplanets by means of ultrahigh precision photometry on bright stars already known to host planets. It will provide the unique capability of determining accurate radii for a subset of those planets for which the mass has already been estimated from ground-based spectroscopic surveys. CHEOPS will also provide prime targets for future instruments suited to the spectroscopic characterization of exoplanetary atmospheres. IA is strongly contributing for this mission participating both in the board and the core science team of the mission. This work is also closely related with the science data archive which is being developed by our industry partners (DEIMOS), contributing to the development of stronger relation with the Portuguese industry in the area of scientific related software. Moreover, there is a contribution for the mission science operation centre, more specifically for the CHEOPS data reduction pipeline where we were responsible for the calibration of the pipeline until the end of the nominal mission.

In 2025, CHEOPS continues to operate well within specifications and is delivering important scientific data and high-impact results. IA has continued to provide full maintenance support for the data-reduction pipeline during the first extension of the mission. This year, we made 3 releases of the pipeline: 15.1.0, 15.1.1, 15.1.2, and 15.1.3. These releases strengthened the robustness of the pipeline and enhanced data processing performance and scientific usability. As data taken during the South Atlantic Anomaly and now downloaded on Earth and provided to the DRP, we improved the robustness against high numbers of cosmic ray hits and provided a new flag and metric to identify affected exposures. We also improved photometric performances for very bright stars (background and smearing correction). The performances of the pipeline in terms of memory use and running time were also improved.

Over the past year, we have also begun preparing the documentation and technical justifications required for a second mission extension. This includes planning the necessary upgrades and adjustments to account for instrument aging and to ensure the continued reliability and scientific productivity of CHEOPS in the coming years.

PLATO (ESA)

The PLATO mission, whose main scientific focus is the detection and characterization of extra-solar planets orbiting nearby, bright stars, using the transit method, as well as the detailed characterization of their host stars through asteroseismology, has been adopted by ESA in June 2017. The instrumentation team has leadership of several work packages for the development of software for the Plato Data Centre (PDC) as well as in the development of the Optical Ground Segment (OGSE) component to test and calibrate the PLATO cameras on ground.

On the hardware side, our participation includes the development of the OGSE. In 2025, the team has most of all supported the activities concerning the development of 2 units of the OGSE previously delivered to CSL (Belgium), as well as (through a direct contract with ESA) the development of a third OGSE unit, which was already commissioned to ESTEC.

Small adaptations to the light source on the ESA unit were implemented and commissioned, enabling the use this system to perform tests and verification with the Plato FM telescopes.

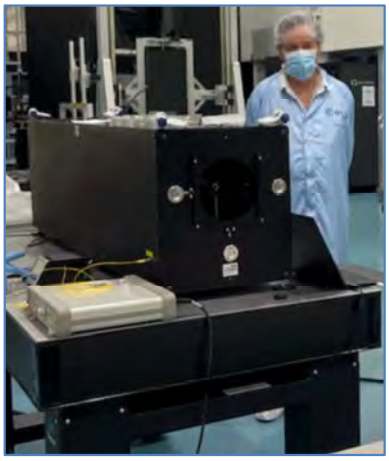


Figure 6 Commissioning OGSE unit delivered to ESA-ESTEC

On the software side, the team kept developing four different components (and leadership of respective work packages) related with the Plato Data Centre (PDC): Target star CCD position calculation, Planet candidate ranking and false positive modelling, Model Grid Acquisition, and Target Preparation Tool. All activities went smoothly.

ARIEL (ESA)

ARIEL (Atmospheric Remote-sensing Exoplanet Large-survey) was one of the three candidate missions selected by the European Space Agency (ESA) for its next medium-class science mission due for launch in 2028. The goal of the ARIEL mission is to investigate the atmospheres of several hundred planets orbiting distant stars to address the fundamental questions on how planetary systems form and evolve.

The main activities Instrumentation group in ARIEL during this period, and together with the OGSE team led by Oxford University, were associated to the final design and assembly of part of OGSE system, associated to the illumination module and reference detector subsystem working in the Visible /Near Infrared part of the spectrum. IA group is also responsible for the development of the EGSE subsystem, that controls all the devices of the OGSE infrastructure (both IA and Oxford equipment), including the development of the control software of the full OGSE setup.

The team is now preparing both the optical illumination units and the control electronics and software to start the integration and testing on site (at RAL/UK) for the payload testing and calibration phase (to occur 4th semester 2026)

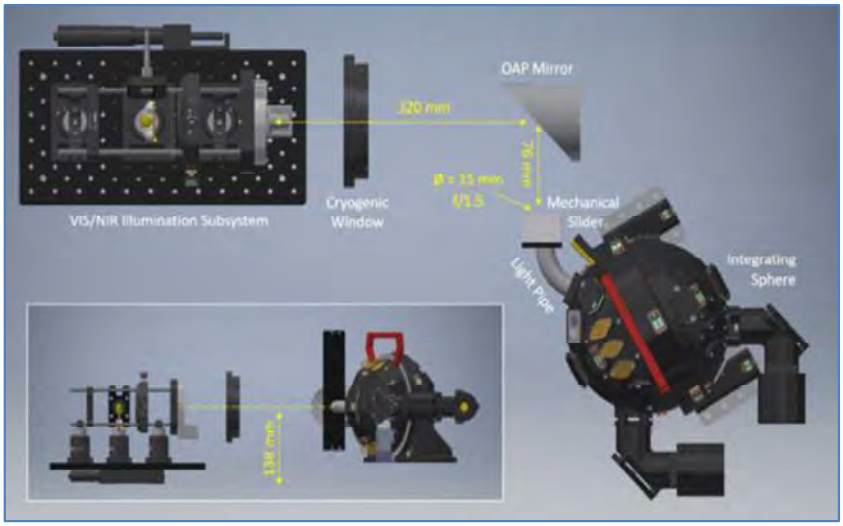


Figure 7 Illustration of part of the OGSE optical setup including the VISNIR source developed by IA

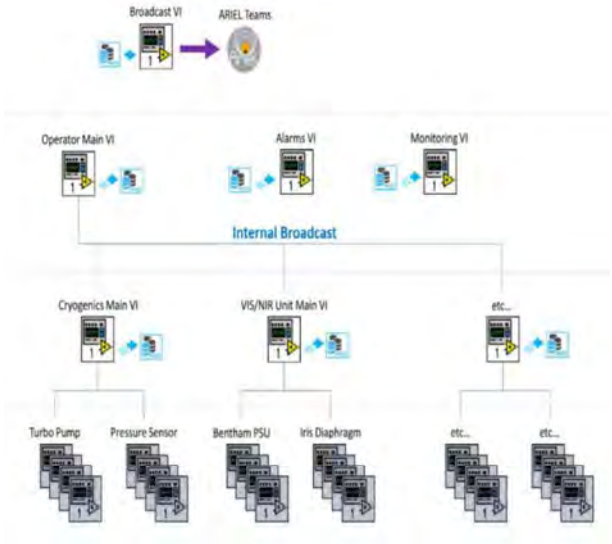


Figure 8 SW high level architecture of the OGSE control system

Highlights

1. **MOONS:** concluded the works and tests in Europe and is shipped to ESO Paranal Observatory awaiting commissioning in 2026.

2. **PoET**: Telescope acceptance and shipped to Chile. Payloads tested, commissioned and waiting to ship and commission of the full project (March in 2026).

3. **BlueMuse:** acceptance of Phase A by ESO and preparation for construction agreement (signed in January 2026)

SyNaPSE – Systems, Networks and Programming for Scientific Exploitation

Sérgio A. G. Sousa & Manuel A. S. Monteiro – Coordinators

Executive Summary

SyNaPSE (Systems, Networks, and Programming for Scientific Exploration) is a multidisciplinary technical and scientific support team dedicated to enabling cutting-edge astrophysical research through robust infrastructure, advanced software development, and domain-specific expertise. The team brings together specialists in scientific software, network and systems administration, data reduction and analysis, advanced computing, and instrumentation support, providing both local and mission-level services. SyNaPSE plays a central role in supporting ground-based facilities and major space missions such as PLATO and CHEOPS, while developing and maintaining software pipelines, databases, websites, and computing resources essential for modern observational astronomy. By combining operational reliability with strong scientific insight, the team ensures that research activities are efficiently supported from data acquisition to advanced analysis and simulation.

Human Resources

During this year human resources were updated with:

- Two new IT technicians (1.6 FTEs) integrated into the team to provide IT and user support.

SyNaPSE Activities in 2025

A significant and continuous effort throughout the year was dedicated to CAUP system and network services. SyNaPSE ensured the maintenance and modernization of core infrastructure, including server and storage systems, network switches, security updates, certificates, authentication mechanisms, and web services. During 2025, several critical improvements were implemented or prepared, such as network hardware upgrades, migration and update of services exposed to external access, modernization of institutional webpages, preparation of new project-specific websites (notably PoET), and improvements to development and collaboration platforms (GitLab, Redmine testing, OwnCloud usage). These activities were complemented by actions aimed at improving internal IT practices and user support, including the preparation of training and cookie seminars on best practices, and planning for equipment acquisition under the EQUIPAR+ framework.

SyNaPSE maintained continuous scientific software development and operational support for multiple major projects. The CHEOPS Data Reduction Pipeline remained under active maintenance and enhancement throughout the year. Activities included internal and consortium releases, bug fixing, optimization of memory usage, refinement of photometric extraction (background and aperture photometry), revision of flagging strategies, and ongoing discussion and implementation of calibration reference files (DARKs, bad pixels). These developments were carried out in close coordination with the CHEOPS Science Operations Centre, while also contributing to reporting obligations and preparation for subsequent official releases.

For ground-based instrumentation, SyNaPSE played a major role in both ANDES and POET. In ANDES, the team focused on science and control software, extensive documentation efforts, and preparation for and follow-up of major design reviews. The year was marked by evolving system requirements, interface delays, and overall schedule slippage, requiring repeated adaptation of documentation, reassessment of priorities,

and coordination with ESO and external partners. Despite these constraints, SyNaPSE addressed a large number of review action items and ensured continuity of the software effort under changing conditions.

In POET, SyNaPSE delivered substantial progress across software and operations. This included the development of observation and scheduling software, multiple graphical user interfaces based on ESO/ELT frameworks, backend scheduling services, and active integration with hardware components such as the dome, PLCs, cameras, and the SHABAR system. The team was strongly involved in testing, commissioning preparation, simulator usage, coordination with ESO software (including ESPRESSO interfaces and pipelines), and deployment planning. By the end of 2025, POET activities had transitioned from development into active preparation for commissioning, representing a major milestone for the project.

SyNaPSE also provided sustained contributions to the PLATO mission, covering several work packages related to planetary and stellar pipelines. Work during 2025 included development and revision of prototypes and pre-versions, algorithm implementation, calibration modes, adaptation of data structures, integration with mission infrastructure, and preparatory testing activities. While some developments were delayed due to external dependencies and evolving mission requirements, the team ensured technical continuity, supported re-scoping where necessary, and contributed to stabilizing core components of the pipelines.

In parallel, the team remained engaged in future-oriented and exploratory activities. This included HRMOS feasibility work and simulations for radial-velocity performance assessment, contributions to scientific white papers, and support for new mission concepts and proposals. SyNaPSE was involved in several proposal efforts at ESA level, including missions such as WALTzER and HAYDN, which progressed to advanced selection stages during 2025, implying increased software and data-analysis demands in the near future. The team also explored opportunities linked to advanced computing, including national HPC resources, machine-learning-oriented seminars, and supercomputing access calls.

Finally, 2025 was a key year for strategic consolidation and visibility of the team. SyNaPSE formally adopted its identity and name, clarified and started the advertisement of its portfolio of expertise within IA, engaged with exploratory national funding schemes, and is ready to support academic training through participation in master-level project supervision. Together, these activities strengthened the team's position as a reliable operational unit and a strategic partner for current and future large-scale scientific projects.

UnF – Training Unit

Carlos J. A. P. Martins & Mário João P. F. G. Monteiro - Coordinators

The CAUP Training Unit provides support for those studying astronomy and astrophysics related subjects at U. Porto. CAUP offers a unique environment for research projects and training at all levels, whether provided in-house, supplied to schools and other partners, or benefiting from our extensive international network of collaborators and partners.

Some of the unit-specific activities and outcomes during 2025 were as follows:

- Doctoral level:
  - A total of 5 PhD theses were successfully defended in the calendar year 2025: T. Boulet, P. Cunha, J. Dias, D. Gruber and N. Rosario.
  - As of 31 December, CAUP was host of several ongoing PhD research projects (see annex).
  - André M. A. C. V. da Silva, was distinguished with the Best PhD Thesis Award of 2024, awarded by Division B – *Facilities, Technologies and Data Science*, of the **International Astronomical Union (IAU)**, for his contribution to the advancement of exoplanet detection techniques.
  - Tomás de Azevedo Silva was awarded by FCUP the **Engenheiro António de Almeida Foundation Award,** for the best thesis entitled "*Characterizing the Hottest Exoplanets at High Spectral Resolution*".

- Masters level:
  - A total of 14 Master dissertations were successfully defended in the calendar year 2024, of which 11 in astronomy (J. Amaral, P. Barbosa, B. Cerqueira, P. Fanha, H. Kasperer, T. Lourenco, T. Monteiro, B. Oliveira, L. Silva, M. Sousa, S. Veiga) and 3 in physics (R. Costa, T. Miranda, J. Pestana).
  - As of 31 December, CAUP was host to 5 Master dissertation projects.

- Undergraduate level:
  - CAUP runs an extremely active program of research internships for undergraduate (and first-year masters) students, most (though not all) in the context of FCUP's PEEC program. A total of 18 such internships were active in 2025. Some of these students published the results of their work in peer-reviewed publications (sometimes as first authors) and presented them in oral communications at international and national scientific meetings.
  - As of 31 December, 15 internships were either in progress or scheduled to start in early 2026.

- International Science Fairs:
  - A research project on vector dark energy by student Carolina Coelho (formerly of Carolina Michaelis secondary school), supervised at CAUP by C. Martins has been awarded Second Prize at EUCYS 2025 (European Union Contest for Young Scientists, Riga, Latvia, September), after being awarded First Prize at the analogous Portuguese event (*Concurso Nacional para Jovens Cientistas e Investigadores 2025*, Porto, May). The work also included another student (Anna-Lena Gschrey, now at LMU, Munich) and led to a peer-reviewed publication in Phys. Rev. D.

- Advanced training:
  - One CAUP advanced course was organized: Python for Astronomers (J. Martins, A. Silva) and Phi in the Sky - Astrophysical probes of fundamental physics (C. Martins).

- Continuing education course:
  - Aimed at high-school teachers but open to others (undergraduate or high-school students, etc.) was taught, **The Physics of Everyday Life** (C. Martins, February-March).

- Training for teachers:
    - Seminário, O que existe na Aula Digital para apoiar alunos estrangeiros? online, 4/12
    - Seminário, Pensamento Crítico e Criativo nas novas gerações: Desafios e caminhos de intervenção, online, 20/11
    - Encontro, 26º Encontro da Rede de Centros Ciência Viva, Campo Maior, 9 a 11/11
    - Seminário, Relatórios de Progresso e de Avaliação, online, 6/11
    - Seminário, Adições nas novas gerações: Riscos, causas e caminhos de prevenção, online, 30/10
    - Encontro, X Jornadas Pedagógicas - Educar com sentido: construir uma escola saudável, sustentável e inovadora, Gondomar, 9/9
    - Conferência, ESA Teach with Space Online Conference 2025, online, 9 e 10/7
    - Workshop, NASE course BOXES ONLINE: Kids Astronomy, online, 16/6
    - Seminário, Boas Práticas na Orientação Doutoral, Porto, 6/5
    - Encontro, Fórum Nacional de Clubes Ciência Viva na Escola, Porto, 4 e 5/4
    - Seminário, Exploração de vídeos em Ciências Naturais com Nearpod Ciências Naturais, online, 26/3
    - Seminário, Porque é que o riso fugiu da escola?, online, 20/3
    - Seminário, Exploração pedagógica da ilustração nas aulas de Ciências Naturais com o apoio da IA, online, 20/3
    - Curso, Atualização e aprofundamento científico-didático no ensino das Ciências Naturais - da Biologia e da Geologia, online, 24/2 a 17/3
    - Seminário, Microrganismos: desvendar os mistérios deste mundo invisível, online, 13/3
    - Workshop, Fora de Portas | A Escola Vai ao Museu, Santa Maria da Feira, 12/3
    - Seminário, Como é que os animais respiram? O storytelling como metodologia ativa Ciências Naturais, online, 12/3
    - Seminário, A importância da ilustração nos manuais de Ciências Naturais, online, 6/3
    - Seminário, Multiculturalismo e Inclusão | Boas Práticas no Acolhimento Escolar, online, 6/3
    - Seminário, Sistema cardiovascular, online, 30/1
    - Seminário, Desenvolvimento psicológico infantojuvenil e puberdade: abordagem pedagógica, online, 28/1
    - Seminário, Vícios e virtudes dos adolescentes – Resiliência e procrastinação, online, 16/1
    - Seminário, Positividade, felicidade e motivação, online, 9/1

ND – Outreach Unit

Filipe A. L. Pires - Executive Director for the Porto Planetarium/ND.

Executive Summary

In 2025, the number of people reached by the activities carried out by the outreach group was 63,866, slightly lower than the historical maximum reached in 2024. The Porto Planetarium—Science Alive Center remained the main center of activity, ensuring regular programming, educational initiatives, and strong interaction with the public and schools, reinforcing its national role in scientific dissemination. Funding of €360,000 for the next 3 years was also obtained through the PESSOAS2030 program, which was essential for consolidating the outreach team and expanding science communication projects.

There was a slight decrease in visitors to the Porto Planetarium,: visitors to sessions 31 469 in 2025 compared to 32 304 in 2024; visitors to educational workshops 18 446 in 2025 compared to 16 435 in 2024. This decrease is due to the greater difficulties that school groups have in leaving school and is transversal to the entire network of Ciência Viva Centers.

Global Indicators

Porto Planetarium

Educational offer for schools: the offer implemented in 2017 continued to expand in 2024 with the following number of participants:

- Planetarium shows: 31 469 visitors in 2025 (32 304 in 2024);
- Hands-on Laboratories: 18 446 visitors in 2025 (16 435 in 2024).

Astronomy in Schools

- Portable Planetarium: planetarium sessions presented for a total of 12 899 in 2025 (9 770 in 2024) children.
- Workshops, observations, talks and hands-on activities for a total of 3 745 participants.

Mais perto das Estrelas

Monthly sessions organised by Planetário do Porto consist of an introductory planetarium session to the night sky and observations of the night sky with small telescopes. Total number of 600 participants.

Outreach Highligths

Presença invisível – A Dança da Matéria Escura

An immersive video art piece, projected in fulldome. This piece was produced by cultural promoter Ganso Manso, as part of the DarkMAGE project - Dark matter and metals in galaxies, whose principal investigator was IA researcher Jarle Brinchmann. The piece was on display at the Porto Planetarium and at the Porto PostDoc documentary film festival. (https://www.planetario.up.pt/pt/evento/presenca-inv-estreia)

"Biosfera da Escuridão: em busca de um Universo Vivo" (Premiere of the planetarium session)

The Porto Planetarium, in collaboration with researchers from the Planets Group, produced the Portuguese version of the session "Dark Biosphere." The session was part of the Porto Planetarium's regular program. (https://planetario.up.pt/pt/recursos/Biosfera-Escuridao)

Hotel Paradoxo, de Alex Cassal / Má-Criação

A co-production by IA, Planetário do Porto, and Má-Criação. This is a hybrid experience combining theater, cinema, and astrophysics, designed to take place in an unconventional space: a planetarium, under the dome of the projection room. Actor Marco Mendonça performs alongside images of stars, galaxies, and cosmic phenomena, boldly taking viewers beyond the final frontier—and back again. A show that feels like looking up at a sky full of stars above our heads. The director and playwright Alex Cassal sought new formats for theatrical events and ways to expand the scene to other spaces. (https://www.planetario.up.pt/pt/evento/hotel-paradoxo-2025)

Change of paradigm during the 20th century – From one to billions of planetary systems

Public lecture at the University of Porto by Professor Michel Mayor, winner of the 2019 Nobel Prize in Physics. Opening of the exhibition at the University of Porto's rectory with the Earth module, 51-pegb, and Moon.(https://www.planetario.up.pt/pt/evento/MichelMayor-30yrs)

2º Regional Meeting of Ciência Viva Clubs at School

As part of the monitoring and strengthening of regional partnerships in the Science Alive Clubs at School Network and with the aim of improving their skills in STEAM areas, the Porto Planetarium – Science Alive Center (PP-CCV), in partnership with the Institute of Astrophysics and Space Sciences (IA) – University of Porto, is promoting the Science Alive Days. (https://www.planetario.up.pt/pt/evento/CCVEscola2-meet)

Events

- «Goodbye Gaia: Our Common Home – Milky Way and the Gaia Mission», janeiro a outubro, coordenador nacional do concurso internacional - European Association for Astronomy Education (EAAE) / European Southern Observatory (ESO).
- «A diversidade do céu na Astronomia Cultural», janeiro e fevereiro, moderação na palestra pública.
- «Hoje Quem Manda Sou Eu», maio e junho, coorganizador da iniciativa de mobilidade dos Diretores dos Centros Ciência Viva.
- «Radioastronomia no Planetário do Porto», janeiro a abril, coorganizador do Workshop - Brazilian Educational Radioastronomy Group (BERG)
- «2º Encontro Regional dos Clubes Ciência Viva do Planetário do Porto», janeiro a março, coorganizador do Encontro.
- «Dia Mundial do Sono - Um bom sono sob as estrelas», fevereiro e março, coorganizador do Workshop.
- «Dia Internacional da Matemática», fevereiro e março, coorganizador do Workshop.
- «AstroGeoFest – Feira de Minerais, Fósseis e Meteoritos», janeiro a fevereiro, colaborador na implementação do evento.
- Dia do asteróide, Parque Biológico de Gaia, 24/1
- O Espaço vai à Escola, 40 palestras em todo o território nacional (incluindo ilhas), outubro a dezembro
- Participation in the National Forum of Science Clubs in Schools, Alfândega do Porto. Attended by the Minister of Education and Science.

Public Science Communication Activities

- Dia Internacional das Mulheres e Raparigas na Ciência 2025
- À descoberta do lado negro do Universo com o telescópio EUCLID
- Programa de Verão do IA 2025
- Matemática: 365 dias no Planetário do Porto
- Eclipse Solar 2025
- Radioastronomia no Planetário do Porto
- Dia Nacional dos Cientistas 2025
- Presença invisível – a Dança da Matéria Escura
- Turismo espacial no Planetário do Porto: umas férias do outro mundo!
- Change of paradigm during the 20th century – From one to billions of planetary systems
- Ciência Viva no Verão 2025

- A diversidade do céu na Astronomia Cultural – palestra pública por Walmir Cardoso
- 10 anos Ondas Gravitacionais
- Semana Mundial do Espaço 2025 – Estreia da sessão Biosfera da Escuridão
- 27º Aniversário do Planetário do Porto / Dia Nacional da Cultura Científica 2025
- Hotel Paradoxo, de Alex Cassal / Má-Criação

Press Releases and news

In 2025 we produced 16 news items in total, distributed as follows:

- 12 press releases,
- 2 news items for the web/social media,
- 2 press notes:

  https://divulgacao.iastro.pt/pt/2025/06/20/dinamo-beta-hydri/

  https://divulgacao.iastro.pt/pt/2025/05/02/catalogo-1cgh/

Bringing school students to Research

- In 2025 we organized the thirteenth edition of the **AstroCamp** (scientific director Carlos Martins). This is a selective residential school/summer camp for highly motivated high-school students, from 45 eligible countries, which took place on 10-24 August, at the CEIA in Paredes de Coura, and included 10 students. Camp activities for the students included lectures (30h) and practical classes (18h), observations, community service, and other leisure activities. Pursuivant to AstroCamp's new a 3-year program, a follow-up session was held at the same venue on 6-10 August, with continuing students from the 2024 edition.
- In July we hosted two-week internships for 7 secondary school students, in the context of the AstroCamp, the Ciência Viva's OCJF project, and other partnerships.
- In October-November 2025 we participated in the International Space Week's 'Space Goes to School' event, organized by Ciência Viva's ESERO office, giving more than 60 in person and online talks across continental Portugal as well as in the Azores and Madeira islands.
- We hosted 3 job shadowing days, involving 5 students: one 12th grade, three 11th grade and one 8th grade.

UnAS – Administration and Services Unit

Manuel A. S. Monteiro - Coordinator

This Unit integrates all supporting services necessary to build an efficient and effective set of resources that provide adequate support for the different activities in CAUP and IA.

The year was marked by an increase in the number of events with high in-person participation, which represented an additional challenge in managing available resources.

Within this year:

- One staff member continues to be dedicated to support the principal investigators of European and national projects, and as a project manager for the research unit IA;
- One staff member dedicated to public procurement;
- One staff member dedicated to human resources;

Regarding project management, the overall activity of the year included:

- Preparation and submission to FCT of 15 pedidos de pagamento;
- Preparation and submission to FCT of 10 pedidos de pagamento for Investigador FCT;
- Preparation and submission to European Commission of 1 pedido de pagamento;
- Preparation and submission to ESA-PRODEX of pedido de reembolso;
- Preparation and submission to Ciência Viva of 6 pedidos de pagamento;
- Preparation and submission of 5 pedidos de pagamento for other funding.

Regarding human resources, the overall activity of the year included:

- 3 Research work contracts;
- 4 Research fellowship contracts;
- 6 Academic internship contracts;
- 5 Work contracts.

The staff participated in specific training actions/events, including:

- Sessão de Informação – A Inteligência Artificial no Ensino e Investigação - FEUP, LIACC, 16 January (Elsa Marta Silva)
- Sessão de Informação – FCT: Concurso para Candidaturas a Projetos de Investigação de caráter Exploratório (PEX) em todos os Domínios Científicos - SIP U.Porto, 21 January (Elsa Marta Silva)
- Ação de formação "Regime geral de I&D" - CEACP – Comité de Estudos e Auditoria em Contratação Pública & CIA Academy, 10 and 12 February (Joana Bateira)
- Perspectives on Astronomy & Society - Pedro Russo (Leiden University & Ciência Viva), 21 February (Elsa Marta Silva)
- Ação de formação "Ação capacitação CCP" - Pavilhão do Conhecimento – Centro Ciência Viva, 14 and 15 March (Joana Bateira)
- Conhecer os principais programas financiadores e as suas plataformas de submissão de candidaturas - SIP U.Porto, 24 April (Elsa Marta Silva)
- Como incorporar questões de género nos projetos de investigação - Equipa do Projeto RESET (Alexandra Lopes & Marisa Matias), 20 May (Elsa Marta Silva)
- Essentials of Horizon Europe Periodic Reporting in 45 Minutes - Europa Media, 25 June (Elsa Marta Silva)
- Understanding Purchase Costs in Horizon Europe - Europa Media, 26 June (Elsa Marta Silva)
- Ação de formação "Plataforma Eletrónica Contratação Pública AnoGOV - Comunicação de Ajustes Diretos Simplificados ao Portal Base – AnoGov, 3 October (Joana Bateira)
- 1ª Conferência Nacional Associação Portuguesa para a Gestão de Ciência - SCIGESTPT, 8 October (Elsa Marta Silva)

- Novo Portal de oportunidades de financiamento do SIP - SIP U.Porto, 9 October (Elsa Marta Silva)
- O ecossistema de investigação da U.Porto - SIP U.Porto, 28 October (Elsa Marta Silva)
- Oportunidades de financiamento para a comunidade científica: projetos, publicações científicas e mobilidades - SIP e SRI U.Porto, 17 November (Elsa Marta Silva)
- Encontro de Gestores de Ciência & Tecnologia da U.Porto 2025 - SIP U.Porto, 3 December (Elsa Marta Silva)

Demonstrações Financeiras

Balanço

Balanço individual em 31 de dezembro de 2025, valores em euro:

RUBRICAS	NOTAS	DATAS	
		31/12/2025	31/12/2024
ACTIVO			
Activo não corrente			
Activos fixos tangíveis	5	570 283,07	142 120,67
Activos intangíveis	4	24 481,82	11 095,12
Investimentos financeiros	15.2	15 953,20	15 953,20
		610 718,09	169 168,99
Activo corrente			
Inventários	6	4 091,89	4 109,99
Créditos a receber	8	4 440,56	1 316,90
Estado e Outros Entes Públicos	8	107 468,95	20 038,14
Diferimentos	8	14 922,30	10 404,26
Outros ativos correntes	8/15.1	3 114 215,81	2 900 218,93
Caixa e depósitos bancários	15.3	1 323 692,34	1 477 557,61
		4 568 831,85	4 413 645,83
Total do activo		**5 179 549,94**	**4 582 814,82**
FUNDOS PATRIMONIAIS E PASSIVO			
Fundos Patrimoniais			
Resultados transitados	8	1 151 304,21	1 079 214,01
Ajustamentos/Outras variações nos fundos patrimoniais	8	46 036,54	60 513,19
		1 197 340,75	1 139 727,20
Resultado líquido do período	8	247 808,44	72 090,20
Total dos fundos patrimoniais		1 445 149,19	1 211 817,40
Passivo			
Passivo corrente			
Fornecedores	8	3 251,18	7 695,69
Estado e outros entes públicos	8	73 449,88	52 875,13
Diferimentos	8	3 195 013,23	2 827 742,10
Outros passivos correntes	8	462 686,46	482 684,50
		3 734 400,75	3 370 997,42
Total do passivo		3 734 400,75	3 370 997,42
Total dos fundos patrimoniais e do passivo		**5 179 549,94**	**4 582 814,82**

Demonstrações Financeiras

Alterações no capital

Demonstração individual das alterações nos fundos patrimoniais no período de 2024

DESCRIÇÃO	NOTAS	Fundos Patrimoniais atribuídos aos instituidores da entidade-mãe								Interesses que não controlam	Total dos fundos patrimoniais
		Fundos	Encedentes Técnicos	Reservas	Resultados Transitados	Excedentes de revalorização	Ajustamentos/Outras variações nos fundos patrimoniais	Resultado líquido do período	Total		
POSIÇÃO NO INÍCIO DO PERÍODO 2024	1				1092400,94		38993,07	-13186,93	1118207,08		1118207,08
ALTERAÇÕES NO PERÍODO											
Primeira adopção de novo referencial contabilístico							0,00		0,00		0,00
Alterações de políticas contabilísticas											
Diferenças de conversão de demonstrações financeiras											
Realização de excedente de revalorização											
Excedentes de revalorização											
Ajustamentos por impostos diferidos											
Outras alterações reconhecidas nos fundos patrimoniais					-13186,93		21520,12	13186,93	21520,12		21520,12
	2				-13186,93		21520,12	13186,93	21520,12		21520,12
RESULTADO LÍQUIDO DO PERÍODO	3							72090,20	72090,20		72090,20
RESULTADO INTEGRAL	4=2+3							85277,13	93610,32		93610,32
OPERAÇÕES COM INSTITUIDORES NO PERÍODO											
Fundos											
Subsídios, doações e legados											
Distribuições											
Outras operações											
	5										0,00
POSIÇÃO NO FIM DO PERÍODO 2024	6=1+2+3+5				1079214,01		60513,19	72090,20	1211817,40		1211817,40

Demonstração individual das alterações nos fundos patrimoniais no período de 2025

DESCRIÇÃO	NOTAS	Fundos Patrimoniais atribuídos aos instituidores da entidade-mãe								Interesses que não controlam	Total dos fundos patrimoniais
		Fundos	Encedentes Técnicos	Reservas	Resultados Transitados	Excedentes de revalorização	Outras variações nos fundos patrimoniais	Resultado líquido do período	Total		
POSIÇÃO NO INÍCIO DO PERÍODO 2025	6				1079214,01		60513,19	72090,20	1211817,40		1211817,40
ALTERAÇÕES NO PERÍODO	2										
Primeira adopção de novo referencial contabilístico											
Alterações de políticas contabilísticas											
Diferenças de conversão de demonstrações financeiras											
Realização de excedente de revalorização											
Excedentes de revalorização											
Ajustamentos por impostos diferidos											
Outras alterações reconhecidas nos fundos patrimoniais					72090,20		-14476,65	-72090,20	-14476,65		-14476,65
	7				72090,20		-14476,65	-72090,20	-14476,65		-14476,65
RESULTADO LÍQUIDO DO PERÍODO	8							247808,44	247808,44		247808,44
RESULTADO INTEGRAL	9=7+8							175718,24	233331,79		233331,79
OPERAÇÕES COM INSTITUIDORES NO PERÍODO											
Fundos											
Subsídios, doações e legados											
Distribuições											
Outras operações											
	10										0,00
POSIÇÃO NO FIM DO PERÍODO 2025	6+7+8+10				1151304,21		46036,54	247808,44	1445149,19		1445149,19

Fluxos de Caixa

RUBRICAS	NOTAS	PERÍODOS	
		31/12/2025	31/12/2024
Fluxos de Caixa das actividades operacionais-método directo			
Recebimento de Clientes e Utentes		327 819,38	312 844,85
Pagamentos de subsídios			
Pagamentos de apoios			
Pagamentos de bolsas		-175 349,43	-115 688,21
Pagamento a fornecedores		-261 241,15	-379 038,83
Pagamentos ao pessoal		-1 398 454,98	-1 435 196,36
Caixa gerada pelas operações		-1 507 226,18	-1 617 078,55
Pagamento/recebimento do imposto s/ rendimento			
Outros recebimentos/pagamentos		1 710 692,00	1 076 613,03
FLUXO DE CAIXA DAS ACTIVIDADES OPERACIONAIS		203 465,82	-540 465,52
Fluxos de caixa das actividades de investimento			
Pagamentos respeitantes a :			
Activos fixos tangíveis		-364 838,96	-116 593,35
Activos intangíveis		-15 900,00	0,00
Investimentos financeiros		0,00	0,00
Outros activos			
Recebimentos provenientes de:			
Activos fixos tangíveis			
Activos intangíveis			
Investimentos financeiros		0,00	0,00
Outros activos			
Subsídios ao investimento		15 157,87	59 522,81
Juros e rendimentos similares		8 250,00	10,15
Dividendos			
FLUXO DE CAIXA DAS ACTIVIDADES DE INVESTIMENTO		-357 331,09	-57 060,39
Fluxos de caixa das actividades de financiamento			
Recebimentos provenientes de:			
Financiamentos Obtidos			
Realização de fundos			
Cobertura de prejuízos			
Doações			
Outras operações de financiamento			
Pagamentos respeitantes a:			
Financiamento Obtidos			
Juros e gastos similares		0,00	0,00
Dividendos			
Redução de fundos			
Outras operações de financiamento			
FLUXO DE CAIXA DAS ACTIVIDADES DE FINANCIAMENTO		0,00	0,00
VARIAÇÃO DE CAIXA E SEUS EQUIVALENTES		-153 865,27	-597 525,91
EFEITO DAS DIFERENÇAS CÂMBIO			
CAIXA E SEUS EQUIVALENTES NO INICIO PERIODO		1 477 557,61	2 075 083,52
CAIXA E SEUS EQUIVALENTES NO FIM PERIODO		1 323 692,34	1 477 557,61

Resultados por natureza

RENDIMENTOS E GASTOS	NOTAS	PERIODOS	
		31/12/2025	31/12/2024
Vendas e serviços prestados	9	327 943,04	304 355,69
Subsídios, doações e legados á exploração	7	1 787 069,50	1 788 065,29
Custo das mercadorias vendidas e das matérias consumidas	6	-0,60	-3,90
Fornecimentos e serviços externos	10	-243 835,87	-387 705,34
Gastos com o pessoal	11	-1 391 240,34	-1 436 241,63
Aumentos/reduções justo valor	15.2		
Outros rendimentos	12	32 680,18	42 543,19
Outros gastos	13	-224 043,19	-178 292,34
Resultado antes de depreciações, gastos de financiamento e impostos		288 572,72	132 720,96
Gastos/reversões de depreciação e de amortização	5/6	-49 014,28	-60 640,91
Resultado operacional (antes de gastos de financiamento e impostos)		239 558,44	72 080,05
Juros e rendimentos similares obtidos	9/14	8 250,00	10,15
Juros e gastos similares suportados	14	0,00	0,00
Resultado antes de impostos		247 808,44	72 090,20
Resultado líquido do período		247 808,44	72 090,20

Anexo às Demonstrações Financeiras

Anexo às demonstrações financeiras do período findo em 31 de dezembro de 2025 (Montantes expressos em euros).

1. NOTA INTRODUTÓRIA

O Centro de Astrofísica da Universidade do Porto, contribuinte 502 216 450, com sede na Rua das Estrelas, s/n, no Porto, criado em Maio de 1989 (Programa Mobilizador de Ciência e Tecnologia), iniciou as atividades em Outubro de 1990.

É uma associação científica e técnica privada, sem fins lucrativos e reconhecida de utilidade pública.

Inscreve entre os seus objetivos apoiar e promover a Astronomia, nomeadamente:

- a investigação científica;

- a formação ao nível pós-graduado e universitário;

- o ensino da Astronomia ao nível não universitário (ensino básico e secundário);

- e a divulgação da ciência e promoção da cultura científica.

2. REFERENCIAL CONTABILÍSTICO DE PREPARAÇÃO DAS DEMONSTRAÇÕES FINANCEIRAS

As demonstrações financeiras anexas estão em conformidade com todas as normas que integram o Sistema de Normalização Contabilística para as Entidades do Sector Não Lucrativo (ESNL). Devem entender-se como fazendo parte daquelas normas as Bases para a Apresentação de Demonstrações Financeiras, os Modelos de Demonstrações Financeiras, o Código de Contas e as Normas Contabilísticas e de Relato Financeiro (NCRF-ESNL) e as Normas Interpretativas.

Sempre que o ESNL não responda a aspetos particulares de transações ou situações, são aplicadas supletivamente e pela ordem indicada, as Normas Internacionais de Contabilidade, adotadas ao abrigo do Regulamento (CE) nº. 1606/2002, do Parlamento Europeu e do Conselho, de 19 de julho; e as Normas Internacionais de Contabilidade (IAS) e Normas Internacionais de Relato Financeiro (IFRS), emitidas pelo IASB, e respetivas interpretações SIC-IFRIC.

Adoção pela primeira vez das Normas Contabilísticas e de Relato Financeiro (NCRF-ESNL)

Desde 01 de janeiro de 2010 até 31 de dezembro de 2011, o CENTRO DE ASTROFISICA elaborou e aprovou, demonstrações financeiras de acordo com o SNC, conforme legislação em vigor.

Em 31 de dezembro de 2012, a preparação destas demonstrações financeiras foi efetuada de acordo com o Sistema de Normalização Contabilística para as Entidades do Sector não Lucrativo (ESNL), não havendo no entanto lugar a quaisquer ajustamentos, nem foi afetada a comparabilidade dos exercícios.

3. PRINCIPAIS POLÍTICAS CONTABILÍSTICAS, ALTERAÇÕES NAS ESTIMATIVAS CONTABILÍSTICAS E ERROS

As principais políticas contabilísticas adotadas na preparação das demonstrações financeiras anexas são as seguintes:

3.1- Bases de apresentação

As demonstrações financeiras anexas foram preparadas no pressuposto da continuidade das operações, a partir dos livros e registos contabilísticos da empresa, mantidos de acordo com as NCRF-ESNL em vigor à data da elaboração das demonstrações financeiras.

3.2 - Rédito

O rédito é mensurado pelo justo valor da contraprestação recebida ou a receber.

O rédito proveniente da prestação de serviços é reconhecido com referência à data da transação, desde que as seguintes condições sejam satisfeitas:

- O montante do rédito pode ser mensurado com fiabilidade;
- É provável que benefícios económicos futuros associados à transação fluam para o CENTRO DE ASTROFÍSICA;

3.3 – Subsídios e outros apoios

Os subsídios apenas são reconhecidos quando há uma certeza razoável de que o CENTRO DE ASTROFÍSICA irá cumprir com as condições de atribuição dos mesmos e de que os mesmos irão ser recebidos.

Os subsídios associados à aquisição de ativos não correntes são reconhecidos inicialmente no capital próprio, sendo subsequentemente imputados numa base sistemática como rendimentos do exercício durante as vidas úteis dos ativos com os quais se relacionam.

Outros subsídios são, de uma forma geral, reconhecidos como rendimentos de uma forma sistemática durante os períodos necessários para os balancear com os gastos que é suposto compensarem.

3.4 - Ativos fixos tangíveis

Os ativos fixos tangíveis adquiridos até 31 de dezembro de 2009, encontram-se registados ao custo considerado, deduzido das correspondentes depreciações acumuladas.

Os ativos fixos tangíveis adquiridos após essa data são inicialmente registados ao custo de aquisição o qual inclui o custo de compra, quaisquer custos diretamente atribuíveis às atividades necessárias para colocar os ativos na localização e condição necessárias para funcionarem da forma pretendida e, quando aplicável, a estimativa inicial dos custos de desmantelamento e remoção dos ativos.

As depreciações são calculadas, após o momento em que o bem se encontra em condições de ser utilizado, de acordo com método da linha recta, em conformidade com o período de vida útil estimado para cada grupo de bens.

As taxas de depreciação utilizadas correspondem aos seguintes períodos de vida útil estimada:

Designação	Anos
Equipamento básico	4 – 10
Equipamento administrativo	3 – 10
Outros ativos tangíveis	3 – 10

As vidas úteis e método de depreciação dos vários bens são revistos anualmente. O efeito de alguma alteração a estas estimativas é reconhecido na demonstração dos resultados prospectivamente.

As despesas de manutenção e reparação (dispêndios subsequentes) que não são suscetíveis de gerar benefícios económicos futuros são registadas como gastos no período em que são incorridos.

O ganho (ou a perda) resultante da alienação ou abate de um ativo fixo tangível é determinado como a diferença entre o montante recebido na transação e a quantia escriturada do ativo e é reconhecido em resultados no período em que ocorre a alienação.

3.5 - Intangíveis

Os ativos intangíveis adquiridos são registados ao custo deduzido de amortizações e perdas por imparidade acumuladas. As amortizações são reconhecidas numa base de linha recta durante a vida útil estimada dos ativos intangíveis. As vidas úteis e método de amortização dos vários ativos intangíveis são revistos anualmente. O efeito de alguma alteração a estas estimativas é reconhecido na demonstração dos resultados prospectivamente.

3.6 - Imparidade de ativos fixos tangíveis e intangíveis

Em cada data de relato é efetuada uma revisão das quantias escrituradas dos ativos fixos tangíveis e intangíveis da empresa com vista a determinar se existe algum indicador de que possam estar em imparidade. Se existir algum indicador, é estimada a quantia recuperável dos respetivos ativos a fim de determinar a extensão da perda por imparidade (se for o caso).

Quando não é possível determinar a quantia recuperável de um ativo individual, é estimada a quantia recuperável da unidade geradora de caixa a que esse ativo pertence.

A quantia recuperável do ativo ou da unidade geradora de caixa consiste no maior de entre o justo valor deduzido de custos para vender e o valor de uso. Na determinação do valor de uso, os fluxos de caixa futuros estimados são descontados usando uma taxa de desconto antes de impostos que reflita as expectativas do mercado quanto ao valor temporal do dinheiro e quanto aos riscos específicos do ativo ou da unidade geradora de caixa relativamente aos quais as estimativas de fluxos de caixa futuros não tenham sido ajustadas.

Sempre que a quantia escriturada do ativo ou da unidade geradora de caixa for superior à sua quantia recuperável, é reconhecida uma perda por imparidade. A perda por imparidade é registada de imediato na demonstração dos resultados na rubrica de "Perdas por imparidade".

A reversão de perdas por imparidade reconhecidas em exercícios anteriores é registada quando há evidências de que as perdas por imparidade reconhecidas já não existem ou diminuíram, sendo reconhecida na demonstração de resultados na rubrica "Reversões de perdas por imparidade", e efetuada até ao limite da quantia que estaria reconhecida (líquida de amortizações) caso a perda não tivesse sido registada.

3.7 - Ativos e passivos financeiros

Os ativos e os passivos financeiros são reconhecidos no balanço quando o CENTRO DE ASTROFÍSICA se torna parte das correspondentes disposições contratuais.

Clientes e dívidas de terceiros

As dívidas de clientes e de outros terceiros encontram-se registadas pelo seu valor nominal deduzido de eventuais perdas de imparidade. As perdas de imparidade correspondem à diferença entre a quantia inicialmente registada e o seu valor recuperável, sendo este o valor presente dos "cash-flows" esperados, descontados à taxa efetiva, as quais são reconhecidas na demonstração dos resultados do período em que são em que são estimadas.

Caixa e equivalentes a caixa

Os montantes incluídos na rubrica de caixa e seus equivalentes correspondem aos valores em caixa, depósitos á ordem e a prazo.

Contas a pagar

As contas a pagar são registadas pelo seu valor nominal dado que não vencem juros e o efeito do desconto é considerado imaterial.

3.8 - Juízos de valor críticos e principais fontes de incerteza associada a estimativas

Na preparação das demonstrações financeiras anexas foram efetuados juízos de valor e estimativas e utilizados diversos pressupostos que afetam as quantias relatadas de ativos e passivos, assim como as quantias relatadas de rendimentos e gastos do período. Durante o decurso do ano de 2025, não ocorreram alterações de políticas contabilísticas ou estimativas relevantes, relativamente às utilizadas na preparação e apresentação das demonstrações financeiras do exercício findo em 31 de dezembro de 2024.

As estimativas e os pressupostos subjacentes foram determinados com base no melhor conhecimento existente à data de aprovação das demonstrações financeiras dos eventos e transações em curso, assim como na experiência de eventos passados e/ou correntes.

Contudo, poderão ocorrer situações em períodos subsequentes que, não sendo previsíveis à data de aprovação das demonstrações financeiras, não foram consideradas nessas estimativas. As alterações às estimativas que ocorram posteriormente à data das demonstrações financeiras serão corrigidas de forma prospetiva. Por este motivo e dado o grau de incerteza associado, os resultados reais das transações em questão poderão diferir das correspondentes estimativas.

Os principais juízos de valor e estimativas efetuadas na preparação das demonstrações financeiras anexas foram os seguintes:

Ativos fixos tangíveis / estimativas de vidas úteis

As depreciações são calculadas sobre o custo de aquisição sendo utilizado o método da linha recta, a partir da data em que o ativo se encontra disponível para utilização, utilizando-se as taxas que melhor refletem a sua vida útil estimada. Os valores residuais dos ativos e as respetivas vidas úteis são revistos e ajustados, se necessário em cada data de relato.

3.9 - Acontecimentos subsequentes

Os acontecimentos após a data do balanço que proporcionem informação adicional sobre condições que existiam à data do balanço ("adjusting events") são refletidos nas demonstrações financeiras. Os eventos após a data do balanço que proporcionem informação sobre condições que ocorram após a data do balanço ("non adjusting events") são divulgados nas demonstrações financeiras, se forem considerados materiais.

3.10 - Especialização dos exercícios

As receitas e despesas são registadas de acordo com o princípio da especialização de exercícios, pelo qual estas são reconhecidas á medida em que são geradas, independentemente do momento em que são recebidas ou pagas. As diferenças entre as receitas e despesas geradas e os correspondentes montantes faturados são registadas nas rubricas de diferimentos.

4. ACTIVOS INTANGÍVEIS

Durante os períodos findos em 31 de dezembro de 2025 e 31 de dezembro de 2024, o movimento ocorrido na quantia escriturada dos activos intangíveis, bem como nas respectivas amortizações acumuladas, foi o seguinte:

Ativos intangíveis: quantias brutas escrituradas	Projetos de desenvolvimento	Programas de computador			Ativos intangíveis em curso	Totais
	Outros		Marcas comerciais			
Saldo Inicial		4.077,14	31.104,89			35.182,03
Adições			15.900,00			15.900,00
Revalorizações						
Transferências						
Alienações						
Sinistros						
Abates						
Saldo Final		4.077,14	47.004,89			51.082,03

Ativos intangíveis: amortizações	Projetos de desenvolvimento	Programas de computador			Ativos intangíveis em curso	Totais
	Outros		Marcas comerciais			
Saldo Inicial		4.077,14	20.009,77			24.086,91
Reforços			2.513,30			2.513,30
Reversões						
Alienações						
Sinistros						
Abates						
Saldo Final		4.077,14	22.523,07			26.600,21

5. ACTIVOS FIXOS TANGÍVEIS

Durante os períodos findos em 31 de dezembro de 2025 e 31 de dezembro de 2024, o movimento ocorrido na quantia escriturada dos ativos fixos tangíveis, bem como nas respetivas depreciações acumuladas, foi o seguinte:

Ativos fixos tangíveis: quantias brutas escrituradas	Equipamento básico	Equipamento de transporte	Equipamento administrativo	Outros ativos fixos tangíveis	Ativos fixos tangíveis em curso	Totais
Saldo Inicial	1.173.470,31	35.400,00	799.035,39	70.098,87	29.655,13	2.107.659,70
Adições	20.003,74		2.029,37	430,70	452.434,31	474.898,12
Revalorizações						
Alienações						
Transferências						
Abates			(2.328,38)			(2.328,38)
Saldo Final	1.193.474,05	35.400,00	798.736,38	70.529,57	482.089,44	2.580.229,44

Ativos fixos tangíveis: depreciações	Equipamento básico	Equipamento de transporte	Equipamento administrativo	Outros ativos fixos tangíveis	Ativos fixos tangíveis em curso	Totais
Saldo Inicial	1.098.551,09	35.400,00	797.760,76	33.827,18		1.965.539,03
Reforços	38.576,32		2.428,24	5.496.42		46.500,98
Reversões						
Alienações						
Transferências			234,74			234,74
Abates			(2.328,38)			(2.328,38)
Saldo Final	1.137.127,41	35.400,00	798.095,36	39.323,60		2.009.946,37

6. CUSTO DAS MERCADORIAS VENDIDAS E MATÉRIAS CONSUMIDAS

O custo das mercadorias vendidas e das matérias consumidas reconhecido nos períodos findos 31 de dezembro de 2025 e em 31 de dezembro de 2024 é detalhado conforme segue:

CMVMC		Mercadorias	TOTAIS
Em 31.12.2025	Saldo Inicial	4.109,99	4.109,99
	Compras		
	Regularizações (+/-)	-17,50	-17,50
	Saldo Final	4.091,89	4.091,89
	CMVMC	0,60	0,60
Em 31.12.2024	Saldo Inicial	4.161,55	4.161,55
	Compras		
	Regularizações (+/-)	-47,66	-47,66
	Saldo Final	4.109,99	4.109,99
	CMVMC	3,90	3,90

7. SUBSÍDIOS E OUTROS APOIOS

O montante dos subsídios e outros apoios, reconhecidos nos períodos findos em 31 de dezembro de 2025 e em 31 de dezembro de 2024, é detalhado como se segue:

No que se refere aos subsídios relacionados com ativos, os valores recebidos são reconhecidos como réditos à medida que os bens subsidiados vão sendo amortizados.

Os subsídios à exploração são reconhecidos como réditos, na medida em que o gasto é realizado.

Relação dos subsídios obtidos e outros apoios			Quantias Concedidas	
			2025	2024
Não reembolsáveis	Subsídios relacionados com activos	Estado e Outros Entes Públicos	5.125,26	50.935,30
		Outras Entidades	10.032,61	8.587,51
		Subtotais	15.157,87	59.522,81
	Subsídios à exploração	Estado e Outros Entes Públicos	1.061.489,02	1.336.378,13
		Outras Entidades	725.580,48	451.687,16
		Subtotais	1.787.069,50	1.788.065,29
Totais			1.802.227,37	1.847.588,10

8. INSTRUMENTOS FINANCEIROS

CRÉDITOS A RECEBER						
	Quantia Nominal		Imparidade		Valor Liquido	
	2025	2024	2025	2024	2025	2024
Clientes Correntes	4.440,56	1.316,90			4.440,56	1.316,90
Clientes Cob. Duvidosa						
Totais	4.440,56	1.316,90	0	0	4.440,56	1.316,90

	OUTROS ATIVOS CORRENTES	
	2025	2024
Fornecedores (Saldos contrários)	399,93	1.330,50
Adiant. e outras operações c/ pessoal		
Adiant. A fornecedores de investimentos		
Devedores por acréscimo de rendimentos		
Juros a receber		
Subsídios a receber	56.000,00	38.000,00
Outros acréscimos de rendimentos	96.992,24	79.434,90
Outros devedores	2.960.823,64	2.781.453,53
Totais	3.114.215,81	2.900.218,93

	ESTADO E OUTROS ENTES PÚBLICOS	
	2025	2024
Finanças	-58.057,31	5.145,11
Segurança Social e Fundo de Compensação	24.038,24	27.691,88
Totais	-34.019,07	32.836,99
Saldos Devedores		
Retenção Imp. s/ Rendimento		
Iva Restituição	106.987,10	20.038,14
Iva a recuperar	481.85	
Restantes impostos		
Totais	107.468.95	20.038,14
Saldos Credores		
Corrente		
Retenção Imp. s/ Rendimento	11.586,50	15.147,50
Iva a pagar	37.825,14	10.035,75
Contribuições seg. social	24.038,24	27.691,88
Outras Tributações (Fundo de Compensação)		
Totais	73.449,88	52.875,13

	DIFERIMENTOS	
	2025	2024
Gastos a reconhecer		
Seguros	1035,32	2.437,38
Outros gastos diferidos	13.886,98	7.966,88
Totais	14.922,30	10.404,26
Rendimentos a reconhecer		
Subsídios	3.193.399,82	2.826.771,37
Outros rendimentos	1.613,41	970,73
Totais	3.195.013,23	2.827.742,10

	OUTROS PASSIVOS CORRENTES	
	2025	2024
Não correntes		
Clientes (saldos contrários)		
Pessoal		
Fornecedores de investimentos		
Totais	0	0
Correntes		
Clientes (saldos contrários)	3.000,00	
Pessoal		
Fornecedores de investimentos	132.040,83	24.310,05
Credores por acréscimos de gastos		
Remunerações a pagar	187.317,28	201.336.79
Outros acréscimos de gastos	4.876,72	230,51
Outros Credores	135.451,63	256.807,15
Totais	462.686,46	482.684,50

	FORNECEDORES	
	2025	2024
Fornecedores, conta corrente	3.251,18	7.695,69
Fornecedores, títulos a pagar		
Fornecedores, faturas em rec. conf.		
Totais	3.251,18	7.695,69

MOVIMENTOS NAS RUBRICAS DE FUNDOS PATRIMONIAIS				
	Saldo Inicial	**Aumentos**	**Reduções**	**Saldo Final**
Fundos				
Reservas				
Resultados transitados	1.079.214,01	72.090,20		1.151.304,21
Excedentes de revalorização				
Outras variações nos fundos patrimoniais	60.513,19	15.157,87	29.634.52	46.036.54
Resultado liquido do exercício	72.090,20	247.808,44	72.090,20	247.808,44
Totais	1.211.817,40	335.056,51	101.724,72	1.445.149,19

9. RÉDITO

Em 31 de dezembro de 2025 e em 31 de dezembro de 2024 os réditos apresentavam a seguinte composição:

Quantias dos réditos reconhecidas no período	2025	2024
	Réditos reconhecidos no período	Réditos reconhecidos no período
Venda de bens	2.28	14,82
Prestação de serviços	327.940,76	304.340,87
Juros	8.250,00	10,15
Royalties		
Dividendos		
Totais	336.193,04	304.365,84

10. FORNECIMENTOS E SERVIÇOS EXTERNOS

A rubrica de "Fornecimentos e serviços externos" em 31 de dezembro de 2025 e 31 de dezembro de 2024 é detalhada conforme se segue:

Fornecimentos e Serviços Externos	2025	2024
Subcontratos	3.487,50	3.900,00
Serviços Especializados:	**35.481,52**	**44.611,92**
Trabalhos Especializados	12.060.15	13.284,00
Publicidade e propaganda	2.007.24	413,28
Vigilância e Segurança		510,45
Honorários	10.730,00	16.290,00
Conservação e Reparação	9.503,78	13.353,76
Outros Serviços Especializados	1.180,35	760,43
Materiais	**16.101,56**	**16.452,17**
Energia e fluídos	**1.888,56**	**1.490,41**
Deslocações, Estadas e Transportes	**154.529,48**	**264.540,36**
Serviços Diversos:	**32.347,25**	**56.710,48**
Rendas e Alugueres	4.960,63	5.732,69
Comunicação	92,94	86,94
Seguros	3.400,57	2.792,40
Contencioso e notariado		665,56
Limpeza, higiene e conforto		
Outros Serviços	23.893,11	47.432,89
Totais	243.835,87	387.705,34

11. GASTOS COM O PESSOAL

A rubrica de "Gastos com o pessoal" em 31 de dezembro de 2025 e em 31 de dezembro de 2024 detalha-se da seguinte forma:

Gastos com o Pessoal	2025	2024
Remunerações do Pessoal	1.115.243,87	1.165.423,88
Encargos sobre Remunerações	240.414,26	249.102,07
Seguro de acidentes de trabalho e doenças profissionais	4.711,63	6.126,77
Outros gastos com Pessoal	30.870,58	15.588,91
Totais	1.391.240,34	1.436.241,63

O nº. médio de pessoas ao serviço em 2024 foi de 37 e em 2025 de 34.

12. OUTROS RENDIMENTOS

A composição da rubrica de "Outros rendimentos e ganhos" em 31 de dezembro de 2025 e 31 de dezembro de 2024 é conforme se segue:

Outros Rendimentos	2025	2024
Descontos de pronto pagamento		
Rendimentos e ganhos rest. Activos financeiros		
Rendimentos e ganhos em Inv. não financeiros		
Outros	32.680,18	42.543,19
Totais	32.680,18	42.543,19

13. OUTROS GASTOS

A decomposição da rubrica de "Outros gastos e perdas" em 31 de dezembro de 2025 e em 31 de dezembro de 2024 é conforme se segue:

Outros Gastos	2025	2024
Impostos	58,21	58,53
Perdas em Inventários		
Gastos e Perdas em Investimentos Não Financ.		
Outros	223.984,98	178.233,81
Totais	224.043,19	178.292,34

14. JUROS E OUTROS RENDIMENTOS E GASTOS SIMILARES

Os gastos e perdas de financiamento em 31 de dezembro de 2025 e 31 de dezembro de 2024 são detalhados conforme se segue:

Juros e Rendimentos Similares Obtidos	2025	2024
Juros Depósitos	8.250,00	10,15
Outros		
Totais	8.250,00	10,15

Juros e Gastos Similares Suportados	2025	2024
Juros Suportados		
Diferenças de câmbio desfavoráveis		
Outros		
Totais	0	0

15. OUTRAS INFORMAÇÕES

15.1. Investimentos Financeiros

INVESTIMENTOS FINANCEIROS						
	Quantia Nominal		Imparidade		Valor Liquido	
	2025	2024	2025	2024	2025	2024
Fundo Compensação	15.953,20	15.953,20			15.953,20	15.953,20
Totais	15.953,20	15.953,20	0	0	15.953,20	15.953,20

15.2 Desagregação dos valores inscritos na rúbrica caixa e depósitos bancários.

Caixa, Depósitos e Outros Inst. Financeiros	2025	2024
Caixa	35,00	35,00
Depósitos Bancários	1.323.657,34	1.477.522,61
Total	1.323.692,34	1.477.557,61

16. ACONTECIMENTOS APÓS A DATA DO BALANÇO

Não são conhecidos eventos posteriores a 31 de dezembro de 2025 que possam influenciar a apresentação e interpretação das demonstrações financeiras reportadas a esta data.

17. DATA DE AUTORIZAÇÃO PARA EMISSÃO

As demonstrações financeiras do exercício findo em 31 de dezembro de 2025 foram aprovadas pela Direção e autorizadas para emissão em 17-04-2026.

Resultados & Fiscalização

Obrigações Fiscais

A Direção informa que a situação perante a Segurança Social e as Finanças se encontra regularizada, pelo que não existe qualquer dívida vencida.

Aplicação dos Resultados

É convicção da Direção que o Relatório de Gestão e demais documentos de prestação de contas retratam de forma clara e apropriada, nos aspetos materialmente relevantes, a posição financeira e o resultado das operações da entidade contabilística do CAUP.

Pelo referido, e tendo em conta que no exercício findo em 31 de dezembro de 2025 se apurou um **Resultado Líquido do Exercício positivo, no montante de 247 808.44 euros** (duzentos e quarenta e sete mil e oitocentos e oito euros e quarenta e quatro cêntimos), a Direção propõe:

- Que sejam aprovados o Relatório de Gestão e os demais documentos de prestação de contas;
- Que a totalidade do "Resultado Líquido do Exercício" seja transferida para "Resultados Transitados".

Assinado por: **MÁRIO JOÃO PIRES FERNANDES GARCIA MONTEIRO**
Data: 2026.04.24 16:34:53 +0100
[redacted]

Mário João P. F. G. Monteiro

(Presidente)

Assinado por: **Margarida Maria Salvador Cunha**
Num. de Identificação: [redacted]
Data: 2026.04.24 16:56:30 +0100

Margarida M. S. Cunha

(Vogal)

Assinado por: **Sérgio António Gonçalves de Sousa**
Num. de Identificação: [redacted]
Data: 2026.04.24 18:47:55 +0100

Sérgio A. G. Sousa

(Vogal)

Porto, 24 de abril de 2026.

Relatório e Parecer do Conselho Fiscal

A proposta do relatório e parecer do Conselho Fiscal aprovada em Assembleia Geral é anexada abaixo.

RELATÓRIO E PARECER DO CONSELHO FISCAL

Senhores Associados do Centro de Astrofisica da Universidade do Porto,

Em conformidade com a legislação em vigor e com o mandato que nos foi confiado, vimos submeter à vossa apreciação o nosso Relatório e Parecer que abrange a atividade por nós desenvolvida e os documentos de prestação de contas do CAUP – Centro de Astrofisica da Universidade do Porto, relativos ao exercício findo em 31 de dezembro de 2025, os quais são da responsabilidade da Direção.

Acompanhamos a evolução da atividade do Centro, da sua contabilidade e o cumprimento do normativo legal e estatutário em vigor, tendo recebido da Direção e serviços do CAUP todas as informações e esclarecimentos solicitados.

No âmbito das nossas funções analisamos o Relatório de Gestão da Direção e as contas do exercício findo em 31 de dezembro de 2025, que compreendem o Balanço (que evidencia um total de 5.179.549,94 Euros e um total dos Fundos Patrimoniais de 1.445.149,19 Euros, incluindo um Resultado Líquido do Período positivo de 247.808,44 Euros), a Demonstração dos Resultados por Natureza, a Demonstração das Alterações nos Fundos Patrimoniais, a Demonstração dos Fluxos de Caixa e o respetivo Anexo, composto pelas notas explicativas.

A análise dos documentos acima referidos permite concluir pela boa compreensão da situação financeira do CAUP em 31 de dezembro de 2025, assim como pela satisfação das disposições legais e estatutárias aplicáveis.

Face ao referido, o Conselho Fiscal do CAUP – Centro de Astrofisica da Universidade do Porto, pronuncia-se com o seguinte parecer:

Que seja aprovado o Relatório de Gestão, a proposta nele expressa, bem como as Contas referentes ao ano findo a 31 de dezembro de 2025.

Porto, 20 de abril de 2026

Presidente,

[redacted]

(Dr. Filipe Pires)

Vogal,

[redacted]

(Prof. Jorge F. Gameiro)

Relator,

[redacted]

(Dra. Marlene Rebelo)

Anexo: Indicadores relevantes

Research projects and grants

Research projects/programs

During 2025 there were 22 funded projects in CAUP, which provided most of the funds available for research related expenses, as well as for outreach and basic expenses. The research projects that in 2025 were supported by national and European funds are:

(i) Projects funded by the European Commission (EC):

- *FInding ExoeaRths: tackling the ChallengEs of stellar activity (FIERCE)* (ERC GAP-101052347); PI: **Nuno Santos**; start date: 01 October 2022 – end date: 30 September 2027
- *Euclid Legacy Science Advanced analysis tools (ELSA) (ERC GAP-101135203)*; PI: **Jarle Brinchmann**; start date: 01 January 2024 – end date: 31 December 2027
- *The Wide-Field Spectroscopic Telescope (WST) (ERC GAP-10118353)*; PI: **Jarle Brinchmann**; start date: 01 February 2025 – end date: 31 January 2028

(ii) Research projects funded by Fundação para a Ciência e a Tecnologia (FCT):

- *Dark matter and metals in galaxies (DarkMAGE)* (PTDC/FIS-AST/4862/2020); PI: **Jarle Brinchmann**; start date: 01 September 2021 – end date: 31 August 2025
- *Phi in the Sky: Astrophysical probes of fundamental physics* (PTDC/FIS-AST/4862/2020); PI: **Carlos Martins**; start date: 01 January 2023 – end date: 31 December 2026
- *Using Ap stars as LABoratories for probing chemical transport mechanisms, with ultra-precise space-based photometry* (2022.03993.PTDC); PI: **Margarida Cunha**; start date: 10 March 2023 – end date: 09 March 2025
- *Exploring novel ways to deal with HI IM systematics* (2023.15069.PEX); PI: **José Fonseca**; start date: 20 February 2025 – end date: 19 August 2026
- *Powering the search of LAEs with transformers for large-scale extragalactic surveys* (PLATES) (2024.05289.RESTART); PI: **Ana Afonso**; start date: 01 July 2025 – end date: 31 December 2026

(iii) Infrastructure funded projects (FCT):

- *R&D Unit 2020-2023: Instituto de Astrofísica e Ciências do Espaço* (UIDB/04434/2025); PI: **Manuel Abreu**; start date: 01 January 2025 – end date: 31 December 2029

(iv) Other projects:

- *PLATO OGSE and PDC* (ESA Contract No. 4000133026); PI: **Nuno Santos**; start date: 1 January 2018 – end date: 31 December 2025
- *ANDES@ELT* (ESA Contract No. 4000143136); PI: **Nuno Santos**; start date: 01 January 2023 – end date: 31 December 2025
- *e-CHEOPS: Extending the CHEOPS mission* (ESA Contract No. 4000142255); PI: **Sérgio Sousa**; start date: 01 October 2023 – end date: 31 December 2025

Outreach and educational projects

During 2025, there were 5 funded outreach/educational projects in CAUP, which provide funds available for outreach and/or education related expenses. These were:

- *AstroCamp 2025*; PI: **Carlos Martins**; start date: 01 January 2025 – end date: 31 December 2025
- *Ocupação Científica dos Jovens nas Férias 2025*; PI: **Carlos Martins**; start date: 01 January 2025 – end date: 31 December 2025
- *Verão em Rede 2025*; PI: **Filipe Pires**; start date: 01 January 2025 – end date: 31 December 2025

- *Rede de Escolas Ciência Viva* (RE-C06-i04.02 - Impulso Jovem Steam, PRR_ID73); PI: **Filipe Pires**; start date: 01 March 2023 – end date: 30 June 2025
- *Rede de Clubes Ciência Viva nas Escolas* (RE-C06-i04.02 - Impulso Jovem Steam, PRR_ID6); PI: **Filipe Pires**; start date: 01 September 2023 – end date: 30 September 2025

Research grants

Several grants that have been active in 2025 with financial support of CAUP or with CAUP as the host institution.

The ongoing Post-Doctoral grants were:

1. Marta Cortesão, Research fellowship - postdoctoral (CIAAUP-05/2024-BIPD), CAUP, 14 June 2024
2. Cédric Pedroso Pereira, Research fellowship - postdoctoral (CIAAUP-03/2025-BIPD), CAUP, 15 February 2025

The ongoing research grants for PhD students were:

1. Eduardo Campos Gonçalves, Research assistantship grant for PhD degree (CIAAUP-09-2024-BI-D), CAUP, 01 October 2024
2. Yuri C. Damasceno, Research assistantship grant for PhD degree (2024.01038.BD), Fundação para a Ciência e a Tecnologia, 01 October 2024
3. Inês Martins Rolo, Research assistantship grant for PhD degree (2024.01287.BD), Fundação para a Ciência e a Tecnologia, 01 September 2024
4. Afonso Morgado Mota, Research assistantship grant for PhD degree (2024.02676.BD), Fundação para a Ciência e a Tecnologia, 01 September 2024
5. Jennifer Peralta Lucero, Research assistantship grant for PhD degree (CIAAUP-22/2023-BI-D), CAUP, 15 December 2023
6. Ricarda Heilemann, Research assistantship grant for PhD degree (CIAAUP-18/2023-BI-D), CAUP, 01 October 2023
7. Clara Marie Winckler, Research assistantship grant for PhD degree (UI/BD/154758/2023), Fundação para a Ciência e a Tecnologia, 01 December 2023
8. Alba Barka, Research assistantship grant for PhD degree (CIAAUP-21/2023-BI-D), CAUP, 01 November 2023
9. Catarina M. J. Marques, Research assistantship grant for PhD degree (2023.03984.BD), Fundação para a Ciência e a Tecnologia, 01 October 2023
10. Carmen San Nicolás Martinéz, Research assistantship grant for PhD degree (CIAAUP-12/2023-BI-D), CAUP, 15 September 2023
11. Daniel A. D. Vaz, Research assistantship grant for PhD degree (2022.13277.BD), Fundação para a Ciência e a Tecnologia, 01 January 2023
12. Bárbara M. T. B. Soares, Research assistantship grant for PhD degree (2022.11805.BD), Fundação para a Ciência e a Tecnologia, 01 September 2022
13. Sergei Mukovnikov, PhD grant (UI/BD/152220/2021), Fundação para a Ciência e a Tecnologia, 15 January 2022
14. Alexandre Miguel Baptista Branco, Research assistantship grant for PhD degree (CIAAUP-02/2025-BI-D), CAUP, 1 February 2025
15. Andreas Wilhelm de Barros da Silva Neitzel, Research assistantship grant for PhD degree (2025.01843.BD), Fundação para a Ciência e a Tecnologia, 01 September 2025
16. Samuel Rocha Pinto Veiga, Research assistantship grant for PhD degree (2025.03891.BD), Fundação para a Ciência e a Tecnologia, 01 September 2025

17. Telmo Filipe Pereira Monteiro, Research assistantship grant for PhD degree (2025.00631.BD), Fundação para a Ciência e a Tecnologia, 01 September 2025

The completed research grants for PhD students in 2025 were:

1. Afonso M. A. Vale, Research assistantship grant for PhD degree (CIAAUP-15/2024-BI-D), CAUP, 01 November 2024 to 31 August 2025
2. Pedro M. H. Branco, Research assistantship grant for PhD degree (CIAAUP-14/2024-BI-D), CAUP, 01 November 2024 to 31 October 2025
3. Ana Rita Costa Silva, PhD grant (2021.07856.BD), Fundação para a Ciência e a Tecnologia, 01 October 2021 to 31 March 2025
4. João D. F. Dias, PhD grant (SFRH/BD/150990/2021), Fundação para a Ciência e a Tecnologia, 01 February 2021 to 31 January 2025
5. Nuno M. Rosário, PhD grant (2020.05472.BD), Fundação para a Ciência e a Tecnologia, 01 February 2021 to 31 January 2025
6. David Grüber, PhD grant (2020.07632.BD), Fundação para a Ciência e a Tecnologia, 01 October 2020 to 15 February 2025
7. Miguel T. Clara, PhD grant (2020.07530.BD), Fundação para a Ciência e a Tecnologia, 01 October 2020 to 30 January 2025
8. Pedro Alexandre C. Cunha, Research assistantship grant for PhD degree (2022.11477.BD), Fundação para a Ciência e a Tecnologia, 01 September 2022 to 30 June 2025

The ongoing research grants for master students were:

1. Tiago Martins Sinde Lourenço, Research assistantship grant for MSc degree (CIAAUP-10/2025-BI-M), CAUP, 15 October 2025

The completed research grants for master students in 2025 were:

1. Iuna Maya Dreyer, Research assistantship grant for MSc degree (CIAAUP-12/2024-BI-M), CAUP, 01 November 2024 to 30 June 2025
2. Pedro Belo Barbosa, Research assistantship grant for MSc degree (CIAAUP-13/2024-BI-M), CAUP, 01 November 2024 to 30 June 2025

The completed research grants for initialisation to research in 2025 were:

1. Emmanouela Gerakaki, Research Initiation Fellowship (BII) (CIAAUP-05/2025-BII), CAUP, 01 June to 31 August 2025

The completed Science and Technology Management Grants in 2025 were:

1. Tania F. S. Cunha, Science and Technology Management Grant (SFRH/BGCT/143136/2019), Fundação para a Ciência e a Tecnologia, 01 February 2019 to 31 January 2025

Scientific output and other indicators

Evolution of scientific output

The scientific output of CAUP in 2025 was (see lists below):

- Papers in referred journals 190
- Papers in proceedings 5
- Communications in international meetings 71
- Communications in national meetings 38
- Observing runs 20

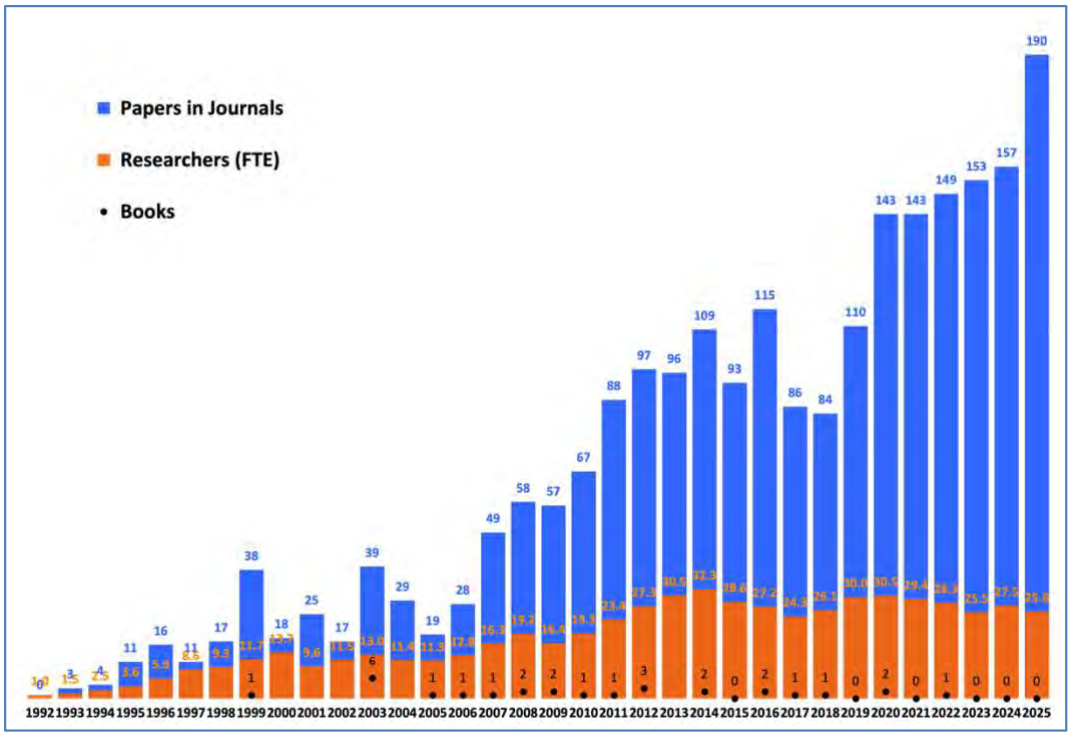


Figure 5: Blue bars – CAUP Publications in refereed journals per year; Orange bars – number of researchers with a PhD in full-time-equivalent (FTE) units; dots – books edited/published per year.

The **h-index of CAUP is 165** (for a total of 156 634 accumulated citations).

If only refereed papers – as defined by ISI – are considered, the average number of citations per article is above 59. The evolution of this number over the years can be seen in Figure 7. The curve shows that the quality of the papers produced by CAUP (as measured by the average number of citations) continues to increase steadily.

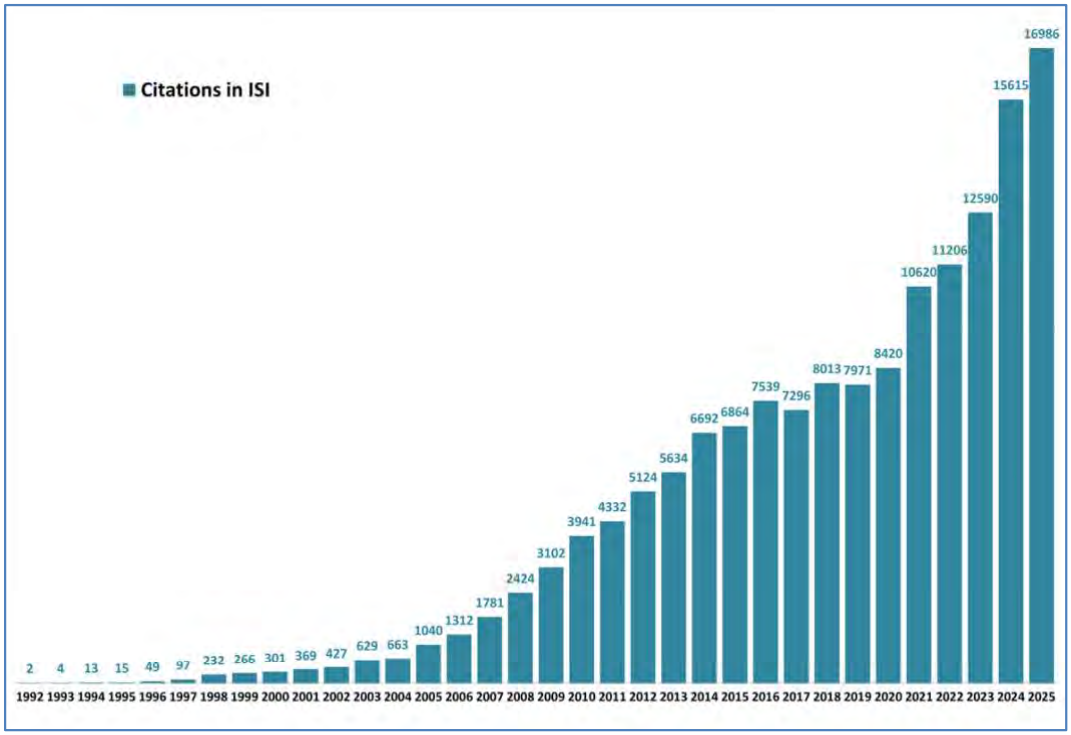


Figure 6: Citations per year from ISI using all entries in the database with CAUP/IA-U.Porto in the affiliation.

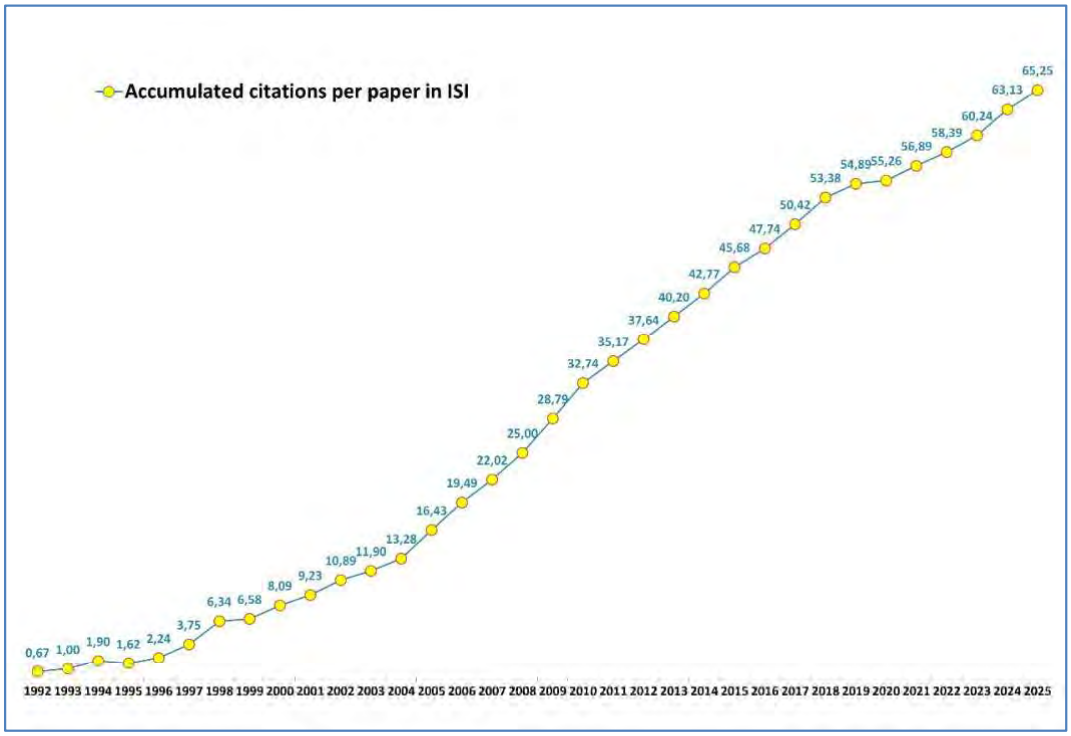


Figure 7: Accumulated citations per paper in ISI using all entries in the database with CAUP in the affiliation.

In 2025 CAUP organized, or co-organized, the following conferences, workshops, meetings or schools:

- *5th Planetary Systems Day @IA*; 27 January 2025; Porto, Portugal
- *Escape of Lyman radiation from galactic labyrinths*; 8 to 11 April 2025; OAC, Kolymbari, Crete
- *Stars Day 4.5*; 8 May 2025; Porto, Portugal
- *Euclid Consortium's Theory SWG Annual Meeting*, 4 to 6 June 2025, Porto, Portugal
- *f(R, Matter) meeting*; 18 June 2025; Porto, Portugal

- *The Sixth Workshop on Extremely Precise Radial Velocities (EPRV 6)*; 30 June to 3 July 2025; Porto, Portugal
- *2-DEMOC*, 25 to 26 September 2025, Porto, Portugal
- *12th Iberian Meeting on Asteroseismology*; 23 to 26 November 2025; Luso, Portugal
- *COSMONATA 2025*; 22 December 2025; Porto/Lisboa/Online, Portugal

Several team members also integrated the scientific organising committees of international Meetings/Conferences and have continued to serve as referees in all major international astronomy research journals. Several members of CAUP were also involved in activities within international Consortia and/or Working Groups.

In 2025 some members of the Research Unit served as National Delegates to European Organizations (ESA, ESO), served individually as experts in several international organisations, integrate on an individual basis European Commission Research Structures, or integrate the Scientific Committees, Commissions and/or Working Groups of the International Astronomical Union (IAU). CAUP researchers also served as evaluators for FCT panels (projects and/or grants) and in panels of several European programmes.

In 2025, CAUP received 23 visitors to develop collaborative work with team members, most of them being supported under the ongoing exchange programmes and projects and organised 14 scientific seminars + 11 further organised by IA/U.Lisboa or IA/U.Coimbra with CAUP participation, as well as frequent journal clubs in the various groups, the majority online.

Publications

This year the publication in high impact journals includes one article in *Nature* and one in *Science*.

Refereed publications

1. B. C. Allanach, Y. Li, D. Huber, J. M. J. Ong, J. L. Van Saders, **R. Costa**, J. R. Larsen, S. Basu, T. R. Bedding, F. Dai et al. (*including:* **T. L. Campante**, **M. J. P. F. G. Monteiro**), 2025; *K Dwarf Radius Inflation and a 10 Gyr Spin-down Clock Unveiled through Asteroseismology of HD 219134 from the Keck Planet Finder*; The Astrophysical Journal, 984, 125, 18
2. D. Massari, E. Dalessandro, D. Erkal, E. Balbinot, J. Bovy, I. McDonald, A. M. N. Ferguson, S. S. Larsen, A. Lançon, F. Annibali et al. (*including:* **J. Brinchmann**, **J. Dinis**, **I. Tereno**), 2025; *Euclid: Early Release Observations – Unveiling the morphology of two Milky Way globular clusters out to their periphery*; Astronomy & Astrophysics, 697, A8, 15
3. M. Stangret, E. Palle, E. Esparza-Borges, J. Orell-Miquel, N. Casasayas-Barris, M. R. Zapatero Osorio, **E. A. S. Cristo**, R. Allart, Y. Alibert, F. Borsa et al. (*including:* **O. Demangeon**, **P. Figueira**, **C. J. A. P. Martins**, **N. C. Santos**), 2025; *The obliquity and atmosphere of the hot Jupiter WASP-122b (KELT-14b) with ESPRESSO: An aligned orbit and no sign of atomic or molecular absorption*; Astronomy & Astrophysics, 691, A120, 19
4. J. A. Acevedo Barroso, C. M. O'Riordan, B. Clément, C. Tortora, T. E. Collett, F. Courbin, R. Gavazzi, R. B. Metcalf, V. Busillo, I. T. Andika et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **J. Dinis**, **I. Tereno**), 2025; *Euclid: The Early Release Observations Lens Search Experiment*; Astronomy & Astrophysics, 697, A14, 16
5. **K. Al Moulla**, 2025; *ARVE: Analyzing Radial Velocity Elements: I. The Code*; Astronomy & Astrophysics, 701, A266, 18
6. R. Allart, Y. Carteret, V. Bourrier, L. Mignon, F. Baron, C. Cadieux, A. Carmona, C. Lovis, H. Chakraborty, **E. Delgado-Mena** et al. (*including:* **S. C. C. Barros**, **N. C. Santos**, **M. Abreu**, **A. Cabral**, **J. M. Coelho**, **A. R. Costa Silva**, **E. A. S. Cristo**, **J. Gomes da Silva**, **B. Wehbe**), 2025; *NIRPS detection of delayed atmospheric escape from the warm and misaligned Saturn-mass exoplanet WASP-69 b*; Astronomy & Astrophysics, 700, A7, 25
7. A. Anna John, **K. Al Moulla**, N. K. O'Sullivan, J. Fitzpatrick, A. Collier Cameron, B. S. Lakeland, M. Cretignier, A. Mortier, T. Naylor, J. Llama, 2025; *Granulation on a quiet K dwarf: HD 166620 I. Spectral signatures as a function of line-formation temperature*; Monthly Notices of the Royal Astronomical Society, 543, 3, 1974
8. A. Armeni, B. Stelzer, A. Frasca, C. F. Manara, J. Campbell-White, **J. F. Gameiro**, M. Gangi, 2025; *Spinning-down RU Lup: Constraints on the physics of the outflow from high-resolution spectroscopy*; Astronomy & Astrophysics, 704, A263
9. D. J. Armstrong, A. Osborn, R. P. Milburn, J. Venturini, **V. Zh. Adibekyan**, A. Bonfanti, J. A. Burt, K. A. Collins, **E. Delgado Mena**, A. Hadjigeorghiou et al. (*including:* **S. G. Sousa**, **S. C. C. Barros**, **N. C. Santos**, **T. A. Silva**), 2025; *The NCORES programme: precise planetary masses, null results, and insight into the planet mass distribution near the radius gap*; Monthly Notices of the Royal Astronomical Society, 537, 4, 3175
10. H. Atek, R. Gavazzi, J. R. Weaver, J. M. Diego, T. Schrabback, N. A. Hatch, N. Aghanim, H. Dole, W. G. Hartley, S. Taamoli et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **J. Dinis**, **I. Tereno**), 2025; *Euclid: Early Release Observations – A preview of the Euclid era through a galaxy cluster magnifying lens*; Astronomy & Astrophysics, 697, A15, 17
11. **P. P. Avelino**, A. R. Gomes, **D. A. Tamayo Ramirez**, 2025; *Note on bulk viscosity as an alternative to dark energy*; Physical Review D, 112, 123531
12. E. Bañados, V. Le Brun, S. Belladitta, I. Momcheva, D. Stern, J. C. A. Wolf, M. Ezziati, D. Mortlock, **A. Humphrey**, R. L. Smart et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **I. Tereno**), 2025; *Euclid: the potential of slitless infrared spectroscopy: a $z = 5.4$ quasar and new ultracool dwarfs*; Monthly Notices of the Royal Astronomical Society, 542, 15
13. M. Stalport, A. M. J. Mortier, M. Cretignier, J. A. Egger, L. Malavolta, D. W. Latham, K. A. Collins, C. N. Watkins, F. Murgas, L. A. Buchhave et al. (*including:* **A. M. Silva**), 2025; *TESS and HARPS-N unveil two planets transiting TOI-1453: A super-Earth and one of the lowest mass sub-Neptunes*; Astronomy & Astrophysics, 696, A86, 22

14. O. Balsalobre-Ruza, J. Lillo-Box, **A. M. Silva**, S. Grouffal, J. Aceituno, A. Castro-González, C. Cifuentes, M. R. Standing, J. P. Faria, **P. Figueira** et al. (*including:* **N. C. Santos**, **E. Delgado Mena**, **V. Zh. Adibekyan**, **S. C. C. Barros**, **S. G. Sousa**), 2025; *KOBE-1: The first planetary system from the KOBE survey. Two planets likely residing in the sub-Neptune mass regime around a late K-dwarf*, Astronomy & Astrophysics, 964, A15, 21
15. M. Barberi-Squarotti, J. L. Bernal, P. Bull, S. Camera, I. P. Carucci, Z. Chen, S. Cunnington, B. N. Engelbrecht, **J. Fonseca**, K. Grainge, 2025; *MeerKLASS L-band deep-field intensity maps: entering the H i dominated regime*; Monthly Notices of the Royal Astronomical Society, 537, 4, 3632
16. L. Bazinet, R. Allart, B. Benneke, S. Pelletier, J. P. Wardenier, N. J. Cook, T. Forveille, L. D. Nielsen, **K. Al Moulla**, E. Artigau et al. (*including:* **S. C. C. Barros**, **N. C. Santos**, **M. Abreu**, **A. Cabral**, **J. M. Coelho**, **A. R. Costa Silva**, **E. A. S. Cristo**, **B. Wehbe**), 2025; *Quantifying thermal water dissociation in the dayside photosphere of WASP-121 b using NIRPS*; Astronomy & Astrophysics, 701, A276, 21
17. A. Boldog, G. M. Szabó, L. Kriskovics, L. Borsato, D. Gandolfi, M. Lendl, M. N. Günther, A. Heitzmann, T. G. Wilson, A. Brandeker et al. (*including:* **S. C. C. Barros**, **A. C. M. Correia**, **O. D. S. Demangeon**, **N. C. Santos**, **S. G. Sousa**), 2025; *Transit-timing variations in the AU Mic system observed with CHEOPS*; Astronomy & Astrophysics, 694, A137, 15
18. A. Bonfanti, I. Amateis, D. Gandolfi, L. Borsato, J. A. Egger, P. E. Cubillos, D. J. Armstrong, I. C. Leão, M. Fridlund, B. L. Canto Martins et al. (*including:* **S. G. Sousa**, **V. Zh. Adibekyan**, **N. C. Santos**, **S. C. C. Barros**), 2025; *Radii, masses, and transit-timing variations of the three-planet system orbiting the naked-eye star TOI-396*; Astronomy & Astrophysics, 693, A90, 18
19. F. Bouchy, R. Doyon, F. Pepe, C. Melo, E. Artigau, L. Malo, F. Wildi, F. Baron, X. Delfosse, J. R. de Medeiros et al. (*including:* **N. C. Santos**, **M. Abreu**, **S. C. C. Barros**, **A. Cabral**, **J. Coelho**, **E. A. S. Cristo**, **J. Gomes da Silva**, **E. Delgado-Mena**, **J. P. Faria**, **P. Figueira**, **A. R. Costa Silva**, **B. Wehbe**), 2025; *NIRPS joining HARPS at ESO 3.6 m: On-sky performance and science objectives*; Astronomy & Astrophysics, 700, A10, 26
20. V. Bourrier, M. Steiner, A. Castro-González, D. J. Armstrong, M. Attia, S. Gill, M. Timmermans, J. Fernandez, F. Hawthorn, A. H. M. J. Triaud et al. (*including:* **S. G. Sousa**, **V. Zh. Adibekyan**, **E. Delgado Mena**, **W. Dethier**, **N. C. Santos**, **S. C. C. Barros**, **K. Al Moulla**), 2025; *ATREIDES: I. Embarking on a trek across the exo-Neptunian landscape with the TOI-421 system*; Astronomy & Astrophysics, 701, A190, 30
21. W. Broussard, E. W. Schwieterman, **C. Sousa-Silva**, G. Sanger-Johnson, S. Ranjan, O. Venot, 2025; *The Impact of Extended CO_2 Cross Sections on Temperate Anoxic Planet Atmospheres*; The Astrophysical Journal, 980, 2
22. G. Buldgen, J. Pain, P. Cossé, C. Blancard, F. Gilleron, A. K. Pradhan, C. J. Fontes, J. Colgan, A. Noels, J. Christensen-Dalsgaard et al. (*including:* **M. Deal**), 2025; *Helioseismic inference of the solar radiative opacity*; Nature Communications, 16, 693
23. A. J. Burgasser, E. C. Gonzales, S. A. Beiler, C. Visscher, B. Burningham, G. N. Mace, J. K. Faherty, Z. E. Zhang, **C. Sousa-Silva**, N. Lodieu, 2025; *Observation of undepleted phosphine in the atmosphere of a low-temperature brown dwarf*, Science, 390, 6774, 697
24. E. Caffau, M. Steffen, P. Molaro, P. Bonifacio, N. Christlieb, D. S. Aguado, J. I. González Hernández, M. R. Zapatero Osorio, L. Monaco, M. Limongi et al. (*including:* **C. J. A. P. Martins**, **N. J. Nunes**, **N. C. Santos**), 2025; *Unveiling the nature of HE 0107−5240: a long period binary CEMP-no star with [Fe/H] of −5.56*; Astronomy & Astrophysics, 704, A238, 16
25. Euclid Collaboration, A. A. Nucita, L. Conversi, A. Verdier, A. Franco, S. Sacquegna, M. Pöntinen, B. Altieri, B. Carry, F. De Paolis et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **J. Dinis**, **I. Tereno**), 2025; *Euclid: Detecting Solar System objects in Euclid images and classifying them using Kohonen self-organising maps*; Astronomy & Astrophysics, 694, A116, 15
26. I. P. Carucci, J. L. Bernal, S. Cunnington, M. G. Santos, J. Wang, **J. Fonseca**, K. Grainge, M. O. Irfan, Y. Li, A. Pourtsidou, M. Spinelli, L. Wolz, 2025; *Hydrogen intensity mapping with MeerKAT: Preserving cosmological signal by optimising contaminant separation*; Astronomy & Astrophysics, 703, A222, 25
27. A. Castro-González, F. Bouchy, A. C. M. Correia, A. Sozzetti, J. Lillo-Box, **P. Figueira**, B. Lavie, C. Lovis, M. J. Hobson, **S. G. Sousa** et al. (*including:* **V. Zh. Adibekyan**, **A. M. Silva**, **N. C. Santos**, **J. Rodrigues**, **S. C. C. Barros**, **C. J. A. P. Martins**, **N. J. Nunes**), 2025; *Two neighbours of the ultra-short-period Earth-sized planet K2-157 b in the warm Neptunian savanna*; Astronomy & Astrophysics, 699, A344, 30
28. Z. Chen, S. Cunnington, A. Pourtsidou, L. Wolz, M. Spinelli, J. L. Bernal, M. Barberi-Squarotti, S. Camera, I. P. Carucci, **J. Fonseca**, 2025; *Emission-line Stacking of 21 cm Intensity Maps with MeerKLASS: Inference Pipeline and Application to the L-band Deep-field Data*; The Astrophysical Journal Supplement Series, 279, 279, 30
29. **M. T. Clara**, **M. S. Cunha**, **P. P. Avelino**, **T. L. Campante**, S. Deheuvels, D. R. Reese, 2025; *Seismic modelling of subgiant stars: Testing different grid interpolation methods*; Astronomy & Astrophysics, 694, A314, 20
30. C. Coelho, A.-L. Gschrey, **C. J. A. P. Martins**, 2025; *Observational constraints on vectorlike dark energy*; Physical Review D, 111, 4
31. P. Cortés-Zuleta, I. Boisse, M. Ould-Elhkim, T. G. Wilson, P. Larue, A. Carmona, X. Delfosse, J.-F. Donati, T. Forveille, C. Moutou et al. (*including:* **J. Gomes da Silva**, **J. H. C. Martins**), 2025; *GI 725A b: A potential super-Earth detected with SOPHIE and SPIRou in an M dwarf binary system at 3.5 pc*; Astronomy & Astrophysics, 693, A164, 18
32. **M. Cortesão**, I. Figueiredo, **A. Mota**, 2025; *Microorganismos extremófilos na exploração espacial*; Acta Applicandae Mathematicae, 13, 1
33. **I. A. Costa**, C. Morais, T. Aguiar, **A. R. Silva**, 2025; *Democratizing Astronomy through teacher training in Portuguese-speaking contexts*; Open Astronomy, 34, 1
34. L. Coulombe, B. Benneke, J. Krissansen-Totton, A. L'Heureux, C. Piaulet-Ghorayeb, M. Radica, P. Barroy, E. Ahrer, C. Cadieux, Y. Miguel et al. (*including:* **E. Delgado-Mena**), 2025; *Possible Evidence for the Presence of Volatiles on the Warm Super-Earth TOI-270 b*; The Astronomical Journal, 170, 4
35. **N. Covas**, **I. Matute**, S. Amarantidis, **J. Afonso**, G. Lanzuisi, A. Comastri, S. Marchesi, **C. Pappalardo**, **R. Carvajal**, **P. Papaderos**, 2025; *Unveiling faint X-ray AGN populations in the NewAthena era: insights from cosmological simulations*; Monthly Notices of the Royal Astronomical Society, 541, 1, 17
36. **E. A. S. Cristo**, J. P. Faria, **N. C. Santos**, **W. Dethier**, B. Akinsanmi, **A. Barka**, **O. D. S. Demangeon**, **J. Peralta Lucero**, **A. M. Silva**, 2025; *SOAPv4: A new step toward modeling stellar signatures in exoplanet research*; Astronomy & Astrophysics, 702, A84, 17
37. J. -C. Cuillandre, M. Bolzonella, A. Boselli, F. R. Marleau, M. Mondelin, J. G. Sorce, C. Stone, **F. Buitrago**, M. Cantiello, K. George et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **J. Dinis**, **I. Tereno**), 2025; *Euclid: Early Release Observations — Overview of the Perseus cluster and analysis of its luminosity and stellar mass functions*; Astronomy & Astrophysics, 697, A11, 45

38. J. -C. Cuillandre, E. Bertin, M. Bolzonella, H. Bouy, S. D. J. Gwyn, S. Isani, M. Kluge, O. Lai, A. Lançon, D. Lang et al. (*including:* **F. Buitrago**, **J. Dinis**, **I. Tereno**, **J. Brinchmann**, **A. C. da Silva**), 2025; *Euclid: Early Release Observations – Programme overview and pipeline for compact- and diffuse-emission photometry*; Astronomy & Astrophysics, 697, A6, 43
39. **M. S. Cunha**, **J. Amaral**, S. Cunha Avelino, A. J. G. Falorca, **Y. C. Damasceno**, **P. P. Avelino**, 2025; *Probing the cores of subdwarf B stars: How they compare to cores in helium core-burning red giants*; Astronomy & Astrophysics, 699, A111, 23
40. **P. A. C. Cunha**, **A. Humphrey**, **J. Brinchmann**, **A. Paulino-Afonso**, L. Bisigello, M. Bolzonella, **D. A. D. Vaz**, 2025; *Exploring the physical properties of type II quasar candidates at intermediate redshifts with CIGALE*; Astronomy & Astrophysics, 696, A110, 18
41. W. d'Assignies Doumerg, M. Manera, C. Padilla, O. Ilbert, H. Hildebrandt, L. Reynolds, J. Chaves-Montero, A. H. Wright, P. Tallada-Crespi, M. Eriksen et al. (*including:* **A. C. da Silva**, **I. Tereno**), 2025; *Euclid: Photometric redshift calibration performance with the clustering-redshifts technique in the Flagship 2 simulation*; Astronomy & Astrophysics, 702, A155, 31
42. C. De Leo, M. Martinelli, R. D'Agostino, G. Gianfagna, **C. J. A. P. Martins**, 2025; *Distinguishing distance duality breaking models using electromagnetic and gravitational waves measurements*; Journal of Cosmology and Astroparticle Physics, 2025, 001, 26
43. M. De Wilde, A. Pietrow, M. K. Druett, A. Pastor Yabar, J. Koza, I. Kontogiannis, O. Andriienko, A. Berlicki, A. R. Brunvoll, J. de la Cruz Rodríguez et al. (*including:* **A. M. Silva**), 2025; *Synthesizing Sun-as-a-star flare spectra from high-resolution solar observations*; Astronomy & Astrophysics, 700, A275, 21
44. M. Deal, M.-J. Goupil, J. Philidet, **M. S. Cunha**, R. Teissonniere, E. Josselin, 2025; *Glitches in solar-like oscillating F-type stars. Possible contribution of non-linear terms*; Astronomy & Astrophysics, 693, A240, 19
45. A. Deline, P. E. Cubillos, L. Carone, B.-O. Demory, M. Lendl, W. Benz, A. Brandeker, M. N. Günther, A. Heitzmann, **S. C. C. Barros** et al. (*including:* **S. G. Sousa**, **O. D. S. Demangeon**, **N. C. Santos**), 2025; *Dark skies of the slightly eccentric WASP-18 b from its optical-to-infrared dayside emission*; Astronomy & Astrophysics, 699, A150, 31
46. J. -B. Delisle, J. P. Faria, D. Ségransan, E. Fontanet, W. Ceva, D. Barbato, **S. G. Sousa**, N. Unger, A. Leleu, F. Bouchy et al. (*including:* **N. C. Santos**), 2025; *Architecture of planetary systems with and without outer giant planets: I. Inner planet detections around HD 23079, HD 196067, and HD 86226*; Astronomy & Astrophysics, 703, A78, 13
47. E. Di Valentino, J. Levi Said, A. G. Riess, A. Pollo, V. Poulin, A. Gómez-Valent, A. Weltman, A. Palmese, C. D. Huang, C. van de Bruck et al. (*including:* **A. R. Liddle**, **A. C. da Silva**, **C. M. J. Marques**, **F. S. N. Lobo**, **I. S. Albuquerque**, **J. P. Mimoso**, **M. Cortês**, **M. A. S. Pinto**, **N. J. Nunes**, **T. B. Gonçalves**, **V. da Fonseca**, **S. González-Gaitán**, **S. Marques Nunes**, **T. Barreiro**), 2025; *The CosmoVerse White Paper: Addressing observational tensions in cosmology with systematics and fundamental physics*; Physics of the Dark Universe, 49, 101965
48. D. Doshi, N. B. Cowan, E. Artigau, R. Doyon, **A. M. Silva**, **K. Al Moulla**, Y. Hezaveh, 2025; *The Interpolation Constraint in the RV Analysis of M Dwarfs Using Empirical Templates*; The Astronomical Journal, 170, 5
49. L. Doyle, D. J. Armstrong, L. Acuña, A. Osborn, **S. G. Sousa**, A. Castro-González, V. Bourrier, D. R. Alves, D. Barrado, **S. C. C. Barros** et al. (*including:* **O. Demangeon**, **J. Rodrigues**, **N. C. Santos**), 2025; *Exploring the Neptunian desert: insights from a homogeneous planetary sample*; Monthly Notices of the Royal Astronomical Society, 539, 19
50. M. Ould-Elhkim, C. Moutou, J.-F. Donati, E. Artigau, C. Cadieux, E. Martioli, T. Forveille, **J. Gomes da Silva**, R. Cloutier, A. Carmona, 2025; *The SPIRou Legacy Survey: Near-infrared and optical radial velocity analysis of Gl 480 and Gl 382 using SPIRou, HARPS and CARMENES spectrographs*; Astronomy & Astrophysics, 696, A152, 27
51. R. Doyon, F. Bouchy, F. Pepe, C. Melo, E. Artigau, L. Malo, F. Wildi, F. Baron, X. Delfosse, J. Renan de Medeiros et al. (*including:* **N. C. Santos**, **M. Abreu**, **S. C. C. Barros**, **A. Cabral**, **J. Coelho**, **E. A. S. Cristo**, **J. Gomes da Silva**, **E. Delgado-Mena**, **J. P. Faria**, **P. Figueira**, **A. R. Costa Silva**, **B. Wehbe**), 2025; *NIRPS Joins HARPS: Setting New Standards at Infrared Wavelengths*; The Messenger, 194, 13
52. J. A. Egger, D. Kubyshkina, Y. Alibert, H. P. Osborn, A. Bonfanti, T. G. Wilson, A. Brandeker, M. N. Günther, M. Lendl, D. Kitzmann et al. (*including:* **S. G. Sousa**, **V. Zh. Adibekyan**, **S. C. C. Barros**, **A. C. M. Correia**, **O. D. S. Demangeon**, **N. C. Santos**), 2025; *Searching for hot water world candidates with CHEOPS: Refining the radii and analysing the internal structures and atmospheric lifetimes of TOI-238 b and TOI-1685 b*; Astronomy & Astrophysics, 696, A28, 25
53. A. Ellien, M. Montes, S. L. Ahad, P. Dimauro, J. B. Golden-Marx, Y. Jimenez-Teja, F. Durret, C. Bellhouse, J. M. Diego, S. P. Bamford et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **J. Dinis**, **I. Tereno**), 2025; *Euclid: Early Release Observations: The intracluster light of Abell 2390*; Astronomy & Astrophysics, 698, A134, 23
54. Y. Eschen, T. G. Wilson, A. Bonfanti, C. M. Persson, **S. G. Sousa**, M. Lendl, A. Heitzmann, A. E. Simon, G. Olofsson, A. Castro-González et al. (*including:* **S. C. C. Barros**, **A. C. M. Correia**, **O. D. S. Demangeon**, **N. C. Santos**), 2025; *An ultra-short period super-Earth and sub-Neptune spanning the Radius Valley orbiting the kinematic thick disc star TOI-2345*; Monthly Notices of the Royal Astronomical Society, 544, 2
55. Euclid Collaboration, **A. Humphrey**, **P. A. C. Cunha**, L. Bisigello, C. Tortora, M. Bolzonella, L. Pozzetti, M. Baes, B. R. Granett, A. Amara et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **J. Dinis**, **I. Tereno**, **C. S. Carvalho**, **C. J. A. P. Martins**), 2025; *Euclid preparation: LXXV. Estimating galaxy physical properties using CatBoost chained regressors with attention*; Astronomy & Astrophysics, 702, A74, 22
56. Euclid Collaboration, D. Scognamiglio, T. Schrabback, M. Tewes, B. R. Gillis, H. Hoekstra, E. M. Huff, O. Marggraf, T. D. Kitching, R. Massey et al. (*including:* **I. Tereno**, **C. S. Carvalho**, **J. Brinchmann**, **A. C. da Silva**, **J. Dinis**, **C. J. A. P. Martins**), 2025; *Euclid preparation: LX. The use of HST images as input for weak-lensing image simulations*; Astronomy & Astrophysics, 694, A262, 22
57. Euclid Collaboration, J. Lesgourgues, J. Schwagereit, J. Bucko, G. Parimbelli, S. K. Giri, F. Hervas-Peters, A. Schneider, M. Archidiacono, F. Pace et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **I. Tereno**, **C. S. Carvalho**, **C. J. A. P. Martins**), 2025; *Euclid preparation: LVI. Sensitivity to non-standard particle dark matter models*; Astronomy & Astrophysics, 693, A249, 32
58. Euclid Collaboration, Abdurro'uf, C. Tortora, M. Baes, A. Nersesian, I. Kovačić, M. Bolzonella, A. Lançon, L. Bisigello, F. Annibali et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **J. Dinis**, **I. Tereno**, **C. S. Carvalho**, **C. J. A. P. Martins**), 2025; *Euclid preparation LXXIII. Spatially resolved stellar populations of local galaxies with Euclid: A proof of concept using synthetic images with the TNG50 simulation*; Astronomy & Astrophysics, 702, A72, 30
59. Euclid Collaboration, P. Bergamini, M. Meneghetti, G. Angora, L. Bazzanini, P. Rosati, C. Grillo, M. Lombardi, D. Abriola, A. Mercurio et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **J. Dinis**, **I. Tereno**, **C. S. Carvalho**, **C. J. A. P. Martins**), 2025; *Euclid preparation: LXXIV. Euclidised observations of Hubble Frontier Fields and CLASH galaxy clusters*; Astronomy & Astrophysics, 702, A73, 17

60. Euclid Collaboration, P. Monaco, G. Parimbelli, M. Y. Elkhashab, J. Salvalaggio, T. Castro, M. D. Lepinzan, E. Sarpa, E. Sefusatti, L. Stanco et al. (*including:* **J. Brinchmann, A. C. da Silva, I. Tereno, C. S. Carvalho, C. J. A. P. Martins**), 2025; *Euclid preparation: LXXVI. Simulating thousands of Euclid spectroscopic skies*; Astronomy & Astrophysics, 704, A306, 19
61. Euclid Collaboration, M. Archidiacono, J. Lesgourgues, S. Casas, S. Pamuk, N. Schöneberg, Z. Sakr, G. Parimbelli, A. Schneider, F. Hervas Peters et al. (*including:* **J. Brinchmann, I. Tereno, C. S. Carvalho, C. J. A. P. Martins**), 2025; *Euclid preparation: LIV. Sensitivity to neutrino parameters*; Astronomy & Astrophysics, 693, A58, 36
62. Euclid Collaboration, H. Böhringer, G. Chon, O. Cucciati, H. Dannerbauer, M. Bolzonella, G. De Lucia, A. Cappi, L. Moscardini, C. Giocoli et al. (*including:* **J. Brinchmann, A. C. da Silva, J. Dinis, I. Tereno, C. S. Carvalho, C. J. A. P. Martins**), 2025; *Euclid preparation. LV. Exploring the properties of proto-clusters in the Simulated Euclid Wide Survey*; Astronomy & Astrophysics, 693, A59, 24
63. Euclid Collaboration, M. Selwood, S. Fotopoulou, M. N. Bremer, L. Bisigello, H. Landt, E. Bañados, G. Zamorani, F. Shankar, D. Stern et al. (*including:* **J. Brinchmann, A. C. da Silva, J. Dinis, I. Tereno, C. J. A. P. Martins**), 2025; *Euclid preparation: LVII. Observational expectations for redshift $z > 7$ active galactic nuclei in the Euclid Wide and Deep surveys*; Astronomy & Astrophysics, 693, A250, 35
64. Euclid Collaboration, K. Voggel, A. Lançon, T. Saifollahi, S. S. Larsen, M. Cantiello, M. Rejkuba, J. -C. Cuillandre, P. Hudelot, A. A. Nucita et al. (*including:* **J. Brinchmann, A. C. da Silva, J. Dinis, I. Tereno, C. S. Carvalho, C. J. A. P. Martins**), 2025; *Euclid preparation: LVIII. Detecting extragalactic globular clusters in the Euclid survey*; Astronomy & Astrophysics, 693, A251, 18
65. Euclid Collaboration, N. Tessore, B. Joachimi, A. Loureiro, A. Hall, G. Cañas-Herrera, I. Tutusaus, N. Jeffrey, K. Naidoo, J. D. McEwen et al. (*including:* **J. Brinchmann, A. C. da Silva, J. Dinis, I. Tereno, C. S. Carvalho, C. J. A. P. Martins**), 2025; *Euclid preparation LIX. Angular power spectra from discrete observations*; Astronomy & Astrophysics, 694, A141, 27
66. Euclid Collaboration, J. Adamek, B. Fiorini, M. Baldi, G. Brando, M. -. Breton, F. Hassani, K. Koyama, A. M. C. Le Brun, G. Rácz et al. (*including:* **J. Brinchmann, A. C. da Silva, I. Tereno, C. S. Carvalho, C. J. A. P. Martins**), 2025; *Euclid preparation: LXII. Simulations and non-linearities beyond Lambda cold dark matter. 1. Numerical methods and validation*; Astronomy & Astrophysics, 695, A230, 21
67. Euclid Collaboration, K. Koyama, S. Pamuk, S. Casas, B. Bose, P. Carrilho, I. Sáez-Casares, **L. Atayde**, M. Cataneo, B. Fiorini et al. (*including:* **J. Brinchmann, A. C. da Silva, I. Tereno, C. J. A. P. Martins**), 2025; *Euclid preparation: LXXI. Simulations and nonlinearities beyond ΛCDM. 3. Constraints on f(R) models from the photometric primary probes*; Astronomy & Astrophysics, 698, A233, 24
68. Euclid Collaboration, G. Rácz, M. -. Breton, B. Fiorini, A. M. C. Le Brun, H. A. Winther, Z. Sakr, L. Pizzuti, A. Ragagnin, T. Gayoux et al. (*including:* **J. Brinchmann, A. C. da Silva, I. Tereno, C. S. Carvalho, C. J. A. P. Martins**), 2025; *Euclid preparation: LXIII. Simulations and non-linearities beyond Lambda cold dark matter. 2. Results from non-standard simulations*; Astronomy & Astrophysics, 695, A232, 22
69. Euclid Collaboration, C. J. R. McPartland, L. Zalesky, J. R. Weaver, S. Toft, D. B. Sanders, B. Mobasher, N. Suzuki, I. Szapudi, I. Valdes et al. (*including:* **J. Brinchmann, A. C. da Silva, J. Dinis, I. Tereno, C. S. Carvalho, C. J. A. P. Martins**), 2025; *Euclid preparation: LXIV. The Cosmic Dawn Survey (DAWN) of the Euclid Deep and Auxiliary Fields*; Astronomy & Astrophysics, 695, A259, 15
70. Euclid Collaboration, F. J. Castander, P. Fosalba, J. Stadel, D. Potter, J. Carretero, P. Tallada-Crespí, L. Pozzetti, M. Bolzonella, G. A. Mamon et al. (*including:* **J. Brinchmann, A. C. da Silva, J. Dinis, I. Tereno, C. S. Carvalho, C. J. A. P. Martins**), 2025; *Euclid: V. The Flagship galaxy mock catalogue: A comprehensive simulation for the Euclid mission*; Astronomy & Astrophysics, 697, A5, 47
71. Euclid Collaboration, F. Hormuth, K. Jahnke, M. Schirmer, C. G. Lee, T. C. Scott, R. Barbier, S. Ferriol, W. Gillard, F. Grupp et al. (*including:* **J. Brinchmann, A. C. da Silva, J. Dinis, I. Tereno, C. S. Carvalho, C. J. A. P. Martins**), 2025; *Euclid: IV. The NISP Calibration Unit*; Astronomy & Astrophysics, 697, A4, 21
72. Euclid Collaboration, Y. Mellier, Abdurro'uf, J. A. Acevedo Barroso, A. Achúcarro, J. Adamek, R. Adam, G. E. Addison, N. Aghanim, M. Aguena et al. (*including:* **I. S. Albuquerque, L. Atayde, P. P. Avelino, T. Barreiro, B. J. Barros, J. Brinchmann, F. Buitrago, A. S. C. Carvalho, C. S. Carvalho, D. Castelao, P. A. C. Cunha, A. C. da Silva, J. D. F. Dias, J. Dinis, J. Fonseca, A. Humphrey, F. S. N. Lobo, C. J. A. P. Martins, J. P. Mimoso, N. J. Nunes, D. M. Oliveira, P. Papaderos, A. Paulino-Afonso, J. Retre, A. Rozas-Fernández, I. Tereno**), 2025; *Euclid: I. Overview of the Euclid mission*; Astronomy & Astrophysics, 697, A1, 94
73. Euclid Collaboration, I. Kovačić, M. Baes, A. Nersesian, N. Andreadis, L. Nemani, Abdurro'uf, L. Bisigello, M. Bolzonella, C. Tortora et al. (*including:* **J. Brinchmann, A. C. da Silva, J. Dinis, I. Tereno, C. S. Carvalho, C. J. A. P. Martins**), 2025; *Euclid preparation: LXVIII. Extracting physical parameters from galaxies with machine learning*; Astronomy & Astrophysics, 695, A284, 26
74. Euclid Collaboration, L. Ingoglia, M. Sereno, S. Farrens, C. Giocoli, L. Baumont, G. F. Lesci, L. Moscardini, C. Murray, M. Vannier et al. (*including:* **J. Brinchmann, A. C. da Silva, J. Dinis, I. Tereno, C. S. Carvalho, C. J. A. P. Martins**), 2025; *Euclid preparation: LXV. Determining the weak lensing mass accuracy and precision for galaxy clusters*; Astronomy & Astrophysics, 695, A280, 24
75. Euclid Collaboration, B. Csizi, T. Schrabback, S. Grandis, H. Hoekstra, H. Jansen, L. Linke, G. Congedo, A. N. Taylor, A. Amara et al. (*including:* **J. Brinchmann, A. C. da Silva, J. Dinis, I. Tereno, C. S. Carvalho, C. J. A. P. Martins**), 2025; *Euclid preparation: LXVII. Deep learning true galaxy morphologies for weak lensing shear bias calibration*; Astronomy & Astrophysics, 695, A283, 28
76. Euclid Collaboration, A. Ragagnin, A. Saro, S. Andreon, A. Biviano, K. Dolag, S. Ettori, C. Giocoli, A. M. C. Le Brun, G. A. Mamon et al. (*including:* **J. Brinchmann, A. C. da Silva, J. Dinis, I. Tereno, C. S. Carvalho, C. J. A. P. Martins**), 2025; *Euclid preparation: LXVI. Impact of line-of-sight projections on the covariance between galaxy cluster multi-wavelength observable properties: insights from hydrodynamic simulations*; Astronomy & Astrophysics, 695, A282, 24
77. Euclid Collaboration, M. Cropper, A. Al-Bahlawan, J. Amiaux, S. Awan, R. Azzollini, K. Benson, M. Berthe, J. S. Boucher, E. Bozzo et al. (*including:* **J. Brinchmann, A. C. da Silva, J. Dinis, I. Tereno, C. S. Carvalho, C. J. A. P. Martins**), 2025; *Euclid: II. The VIS instrument*; Astronomy & Astrophysics, 697, A2, 33

78. Euclid Collaboration, K. Jahnke, W. Gillard, M. Schirmer, A. Ealet, T. Maciaszek, E. Prieto, R. Barbier, C. Bonoli, L. Corcione et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **J. Dinis**, **I. Tereno**, **C. S. Carvalho**, **C. J. A. P. Martins**), 2025; *Euclid: III. The NISP Instrument*; Astronomy & Astrophysics, 697, A3, 31
79. Euclid Collaboration, C. Bellhouse, J. B. Golden-Marx, S. P. Bamford, N. A. Hatch, M. Kluge, A. Ellien, S. L. Ahad, P. Dimauro, F. Durret et al. (*including:* **A. C. da Silva**, **J. Dinis**, **I. Tereno**, **C. S. Carvalho**, **C. J. A. P. Martins**), 2025; *Euclid preparation: LXX. Forecasting detection limits for intracluster light in the Euclid Wide Survey*; Astronomy & Astrophysics, 698, A14, 21
80. Euclid Collaboration, M. Y. Elkhashab, D. Bertacca, C. Porciani, J. Salvalaggio, N. Aghanim, A. Amara, S. Andreon, N. Auricchio, C. Baccigalupi et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **J. Dinis**, **I. Tereno**, **C. S. Carvalho**, **C. J. A. P. Martins**), 2025; *Euclid preparation: LXIX. The impact of relativistic redshift-space distortions on two-point clustering statistics from the Euclid wide spectroscopic survey*; Astronomy & Astrophysics, 697, A85, 22
81. Euclid Collaboration, S. de la Torre, F. Marulli, E. Keihänen, A. Viitanen, M. Viel, A. Veropalumbo, E. Branchini, D. Tavagnacco, F. Rizzo et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **J. Dinis**, **I. Tereno**, **C. S. Carvalho**, **C. J. A. P. Martins**), 2025; *Euclid preparation: LXXII. Three-dimensional galaxy clustering in configuration space: Two-point correlation function estimation*; Astronomy & Astrophysics, 700, A78, 18
82. Euclid Collaboration, Abdurro'uf, C. Tortora, M. Baes, A. Nersesian, I. Kovačić, M. Bolzonella, A. Lançon, L. Bisigello, F. Annibali et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **J. Dinis**, **I. Tereno**, **C. S. Carvalho**, **C. J. A. P. Martins**), 2025; *Euclid preparation: LXXIII. Spatially resolved stellar populations of local galaxies with Euclid: A proof of concept using synthetic images with the TNG50 simulation*; Astronomy & Astrophysics, 702, A72, 30
83. **P. Figueira**, J. P. Faria, **A. M. Silva**, A. Castro-González, **J. Gomes da Silva**, **S. G. Sousa**, **D. Bossini**, M. R. Zapatero-Osorio, O. Balsalobre-Ruza, J. Lillo-Box et al. (*including:* **V. Zh. Adibekyan**, **A. Cabral**, **N. C. Santos**, **B. Wehbe**), 2025; *A comprehensive study on radial velocity signals using ESPRESSO: Pushing precision to the 10 cm/s level*; Astronomy & Astrophysics, 700, A174, 30
84. E. Fontanet, S. Udry, D. Ségransan, P. Figueira, J. A. Acevedo Barroso, B. Akinsanmi, M. Attia, M. Battley, S. Bhatnagar, M. Bugatti et al. (*including:* **N. C. Santos**), 2025; *CORALIE radial-velocity search for companions around evolved stars (CASCADES): IV. New planetary systems around HD 87816, HD 94890, and HD 102888 and an update on HD 121056*; Astronomy & Astrophysics, 699, A38, 15
85. J. Fonte, **J. F. Gameiro**, P. Carvalho, **F. A. L. Pires**, 2025; *Observação astronômica do Sol como recurso didático*; A Física na Escola, 23
86. J. Fonte, P. Carvalho, **J. F. Gameiro**, 2025; *Um estudo sobre o interesse e satisfação do público em astronomia*; Revista Latino-Americana de educação em astronomia, 39
87. A. V. Freckelton, A. Mortier, M. Bedell, S. Morrell, T. Naylor, L. A. Buchhave, G. R. Davies, J. I. González Hernández, B. Klein, E. J. W. de Mooij et al. (*including:* **N. C. Santos**, **S. G. Sousa**), 2025; *gr8stars – I. A homogeneous spectroscopic study of bright FGKM dwarfs and a public library of their high-resolution spectra*; Monthly Notices of the Royal Astronomical Society, 540, 14
88. Y. G. C. Frensch, F. Bouchy, G. Lo Curto, S. Ulmer-Moll, **S. G. Sousa**, **N. C. Santos**, K. G. Stassun, C. N. Watkins, H. Chakraborty, K. Barkaoui, 2025; *Three hot Jupiters transiting K-dwarfs with significant heavy element masses*; Astronomy & Astrophysics, 700, A118, 22
89. Z. Garai, A. Krenn, P. E. Cubillos, G. Bruno, A. M. S. Smith, T. G. Wilson, A. Brandeker, M. N. Günther, A. Heitzmann, L. Carone et al. (*including:* **O. D. S. Demangeon**, **S. C. C. Barros**, **N. C. Santos**, **S. G. Sousa**), 2025; *The KELT-7b atmospheric thermal-inversion conundrum revisited with CHEOPS, TESS, and additional data*; Astronomy & Astrophysics, 700, A5, 26
90. K. George, A. Boselli, J. -C. Cuillandre, M. Kümmel, A. Lançon, C. Bellhouse, T. Saifollahi, M. Mondelin, M. Bolzonella, P. Joseph et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **I. Tereno**), 2025; *Euclid: Early Release Observations of ram-pressure stripping in the Perseus cluster: Detection of parsec-scale star formation within the low surface brightness stripped tails of UGC 2665 and MCG +07-07-070*; Astronomy & Astrophysics, 701, A40, 26
91. D. Godoy-Rivera, S. Mathur, R. A. García, M. H. Pinsonneault, **A. R. G. Santos**, P. G. Beck, D. H. Grossmann, L. Schimak, M. Bedell, J. Merc, A. Escorza, 2025; *Kepler meets Gaia DR3: Homogeneous extinction-corrected color-magnitude diagram and binary classification*; Astronomy & Astrophysics, 696, A243, 24
92. **J. Gomes da Silva**, **E. Delgado-Mena**, **N. C. Santos**, **T. Monteiro**, P. Larue, A. Suárez Mascareño, X. Delfosse, L. Mignon, E. Artigau, N. Nari et al. (*including:* **M. Abreu**, **K. Al Moulla**, **S. C. C. Barros**, **P. M. H. Branco**, **A. Cabral**, **J. M. Coelho**, **A. R. Costa Silva**, **E. A. S. Cristo**, **P. Figueira**, **B. Wehbe**), 2025; *Blind search for activity-sensitive lines in the near-infrared using HARPS and NIRPS observations of Proxima and Gl 581*; Astronomy & Astrophysics, 700, A177, 19
93. C. Gourvès, S. N. Breton, A. Dyrek, A. F. Lanza, R. A. García, S. Mathur, **A. R. G. Santos**, A. Strugarek, 2025; *Non-transiting exoplanets as a means of understanding star–planet interactions in close-in systems*; Astronomy & Astrophysics, 699, A226, 14
94. N. Grieves, F. Bouchy, D. J. Armstrong, B. Akinsanmi, A. Psaridi, S. Ulmer-Moll, Y. G. C. Frensch, R. Helled, S. Müller, H. Knierim et al. (*including:* **N. C. Santos**, **V. Zh. Adibekyan**, **P. Figueira**, **S. G. Sousa**), 2025; *Discovery of a cold giant planet and mass measurement of a hot super-Earth in the multi-planetary system WASP-132*; Astronomy & Astrophysics, 693, A144, 15
95. S. Grouffal, A. Santerne, V. Bourrier, V. Kunovac, C. D. Dressing, B. Akinsanmi, C. Armstrong, S. Baliwal, O. Balsalobre-Ruza, **S. C. C. Barros** et al. (*including:* **O. Demangeon**, **N. C. Santos**, **S. G. Sousa**), 2025; *The star HIP 41378 potentially misaligned with its cohort of long-period planets*; Astronomy & Astrophysics, 701, A173, 15
96. M. L. P. Gunawardhana, **J. Brinchmann**, S. M. Croom, A. J. Bunker, J. Bryant, S. Oh, 2025; *JADES NIRSpec spectroscopy of GN-z11: evidence for Wolf–Rayet contribution to stellar populations at 430 Myr after big bang?*; Monthly Notices of the Royal Astronomical Society, 543, 4, 3172
97. N. Heidari, G. Hébrard, E. Martioli, J. D. Eastman, J. M. Jackson, X. Delfosse, A. Jordán, A. C. M. Correia, **S. G. Sousa**, D. Dragomir et al. (*including:* **S. C. C. Barros**, **O. D. S. Demangeon**), 2025; *Characterization of seven transiting systems, including four warm Jupiters from SOPHIE and TESS*; Astronomy & Astrophysics, 694, A36, 31
98. **R. Heilemann**, M. C. Rosa, J. R. C. C. C. Correia, **C. J. A. P. Martins**, 2025; *Domain wall evolution beyond quartic potentials: The Sine-Gordon potential and Christ-Lee potentials*; Physical Review D, 111, 123550, 29

99. K. Hesse, I. Mireles, F. Bouchy, D. Dragomir, S. Ulmer-Moll, N. L. Eisner, K. G. Stassun, S. N. Quinn, H. P. Osborn, **S. G. Sousa** et al. (*including:* **N. C. Santos**), 2025; *HD 35843: A Sun-like Star Hosting a Long-period Sub-Neptune and Inner Super-Earth*; The Astronomical Journal, 170, 108, 25
100. M. J. Hobson, A. Suárez Mascareño, C. Lovis, F. Bouchy, B. Lavie, M. Cretignier, **A. M. Silva**, **S. G. Sousa**, H. M. Tabernero, **V. Zh. Adibekyan** et al. (*including:* **S. C. C. Barros**, **P. Figueira**, **C. J. A. P. Martins**, **N. J. Nunes**, **J. Rodrigues**, **N. C. Santos**), 2025; *TOI-2322: Two transiting rocky planets close to the stellar rotation period and its first harmonic*; Astronomy & Astrophysics, 702, A32, 20
101. L. K. Hunt, F. Annibali, J. -C. Cuillandre, A. M. N. Ferguson, P. Jablonka, S. S. Larsen, F. R. Marleau, E. Schinnerer, M. Schirmer, C. Stone et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **J. Dinis**, **I. Tereno**), 2025; *Euclid: Early Release Observations – Deep anatomy of nearby galaxies*; Astronomy & Astrophysics, 697, A9, 35
102. M. P. Júlio, J. I. Read, M. S. Pawlowski, P. Li, **D. A. D. Vaz**, **J. Brinchmann**, M. P. Rey, O. Agertz, T. Holmes, 2025; *The radial acceleration relation at the EDGE of galaxy formation: Testing its universality in low-mass dwarf galaxies*; Astronomy & Astrophysics, 704, A330, 16
103. F. Jahandar, R. Doyon, E. Artigau, N. J. Cook, C. Cadieux, J.-F. Donati, N. B. Cowan, R. Cloutier, S. Pelletier, A. Alves-Brito et al. (*including:* **J. H. C. Martins**), 2025; *Chemical Fingerprints of M Dwarfs: High-resolution Spectroscopy on 31 M Dwarfs with SPIRou*; The Astrophysical Journal, 978, 2, 17
104. S. Kálmán, A. E. Simon, A. Deline, S. Csizmadia, G. M. Szabó, D. Ehrenreich, T. G. Wilson, M. N. Günther, A. Heitzmann, **S. G. Sousa** et al. (*including:* **V. Zh. Adibekyan**, **S. C. C. Barros**, **O. D. S. Demangeon**, **N. C. Santos**), 2025; *The CHEOPS view of HD 95338b: Refined transit parameters, and a search for exomoons*; Astronomy & Astrophysics, 701, A240, 22
105. J. Kamulali, **B. Nsamba**, **V. Zh. Adibekyan**, A. Weiss, **T. L. Campante**, **N. C. Santos**, 2025; *MAISTEP: A new grid-based machine learning tool for inferring stellar parameters*; Astronomy & Astrophysics, 695, A57, 12
106. D. Karagiannis, R. Maartens, S. Saito, **J. Fonseca**, S. Camera, C. Clarkson, 2025; *Squeezing information from radio surveys to probe the primordial universe*; Journal of Cosmology and Astroparticle Physics, 2025, 029, 22
107. J. Kim, A. Alavi, C. Snap-Kolas, B. Siana, J. Richard, H. I. Teplitz, J. Colbert, V. Mehta, **A. Paulino-Afonso**, E. Vanzella, 2025; *Compact Size, High ΣSFR: Defining Morphological Features of Lyα Emitters*; The Astrophysical Journal, 996, 2
108. B. Klein, S. Aigrain, M. Cretignier, X. Dumusque, **K. Al Moulla**, J.-F. Donati, N. K. O'Sullivan, H. Yu, A. C. Cameron, O. Barragán, A. Mortier, A. Sozzetti, 2025; *Using Doppler imaging to model stellar activity and search for planets around Sun-like stars*; Monthly Notices of the Royal Astronomical Society, 542, 19
109. M. Kluge, N. A. Hatch, M. Montes, J. B. Golden-Marx, A. H. Gonzalez, J. -C. Cuillandre, M. Bolzonella, A. Lançon, R. J. Laureijs, T. Saifollahi et al. (*including:* **F. Buitrago**, **J. Brinchmann**, **A. C. da Silva**, **J. Dinis**, **I. Tereno**), 2025; *Euclid: Early Release Observations – The intracluster light and intracluster globular clusters of the Perseus cluster*; Astronomy & Astrophysics, 697, A13, 27
110. E. -A. Kolonia, **C. J. A. P. Martins**, K. N. Gourgouliatos, 2025; *Probing fundamental physics using compact astrophysical objects*; Physical Review D, 111, 083017, 10
111. **M. S. N. Kumar**, D. Arzoumanian, S.-I. Inutsuka, R. S. Furuya, N. K. Bhadari, 2025; *Evolution of magnetized hub-filament systems: Comparing the observed properties of W3(OH), W3 Main, and S 106*; Astronomy & Astrophysics, 703, A74, 20
112. S. S. Larsen, A. Ferguson, J. M. Howell, F. Annibali, J. -C. Cuillandre, L. K. Hunt, A. Lancon, T. Saifollahi, D. Massari, M. N. Le et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **I. Tereno**), 2025; *Euclid: Star clusters in IC 342, NGC 2403, and Holmberg II*; Astronomy & Astrophysics, 703, A113, 28
113. P. Larue, X. Delfosse, A. Carmona, N. Meunier, E. Artigau, S. Bellotti, P. Charpentier, C. Moutou, J.-F. Donati, I. Boisse et al. (*including:* **N. C. Santos**), 2025; *Chromaticity of stellar activity in radial velocities: Anti-correlated families of lines on the M dwarf EV Lac with SPIRou and SOPHIE*; Astronomy & Astrophysics, 701, A216, 19
114. P. Leonardi, L. Borsato, L. Pagliaro, D. Kubyshkina, J. A. Egger, T. G. Wilson, A. Heitzmann, A. Brandeker, M. N. Günther, V. Nascimbeni et al. (*including:* **S. G. Sousa**, **V. Zh. Adibekyan**, **S. C. C. Barros**, **O. Demangeon**, **N. C. Santos**), 2025; *Transit timing variations in HIP 41378: CHEOPS and TESS confirm a non-transiting sixth planet in the system*; Acta Applicandae Mathematicae, 702, A211, 22
115. L. Linke, S. Unruh, A. Wittje, T. Schrabback, S. Grandis, M. Asgari, A. Dvornik, H. Hildebrandt, H. Hoekstra, B. Joachimi et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **J. Dinis**, **I. Tereno**), 2025; *Euclid and KiDS-1000: Quantifying the impact of source-lens clustering on cosmic shear analyses*; Astronomy & Astrophysics, 693, A210, 33
116. I. Lockley, D. J. Armstrong, J. Fernández Fernández, S. Millholland, H. Knierim, **E. Delgado Mena**, **S. G. Sousa**, K. A. Collins, C. N. Watkins, S. B. Howell et al. (*including:* **V. Zh. Adibekyan**, **J. Rodrigues**, **N. C. Santos**), 2025; *The TOI-1117 multiplanetary system: 3 sub-Neptunes, 1 in both the Neptunian Desert and Radius Valley*; Monthly Notices of the Royal Astronomical Society, 541, 2, 919
117. A. R. Lopes, A. V. Smith Castelli, A. C. Krabbe, J. A. Hernandez-Jimenez, D. Pallero, S. Torres-Flores, E. Telles, M. Sarzi, A. Cortesi, J. Thainá-Batista et al. (*including:* **C. Lobo**), 2025; *The S-PLUS Fornax Project (S+FP): Mapping Hα+[N II] emission in 77 Fornax galaxy members reaching ~4 Rvir*; Astronomy & Astrophysics, 699, A331, 25
118. R. Luque, K. W. F. Lam, J. Cabrera, A. Bonfanti, Y. Eschen, G. Olofsson, W. Benz, N. Billot, A. Brandeker, **A. C. M. Correia** et al. (*including:* **S. G. Sousa**, **S. C. C. Barros**, **O. D. S. Demangeon**, **N. C. Santos**), 2025; *Improved characterization of the TOI-2141 system: A dense sub-Neptune with non-transiting inner and outer companions*; Astronomy & Astrophysics, 704, A174, 16
119. F. R. Marleau, J. -C. Cuillandre, M. Cantiello, D. Carollo, P.-A. Duc, R. Habas, L. K. Hunt, P. Jablonka, M. Mirabile, M. Mondelin et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **J. Dinis**, **I. Tereno**), 2025; *Euclid: Early Release Observations – Dwarf galaxies in the Perseus galaxy cluster*; Astronomy & Astrophysics, 697, A12, 46
120. C. S. Marques, **A. Mota**, M. Belvedere, D. Castanera, I. Díaz-Martínez, E. Malafaia, S. Pereira, L. M. Rosalino, V. F. Santos, L. Sciscio, E. Dufourq, 2025; *Deep tracks: Using deep learning and procedurally simulated data for automated vertebrate footprints classification*; Ecological Informatics, 93, 103523
121. E. L. Martín, M. Žerjal, H. Bouy, D. Martin-Gonzalez, S. Muñoz Torres, D. Barrado, J. Olivares, A. Pérez-Garrido, P. Mas-Buitrago, P. Cruz et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **J. Dinis**, **I. Tereno**), 2025; *Euclid: Early Release Observations – A glance at free-floating newborn planets in the σ Orionis cluster*; Astronomy & Astrophysics, 697, A7, 15
122. **C. J. A. P. Martins**, 2025; *Varying fundamental constants cosmography*; Physics of the Dark Universe, 49, 102047

123. **C. J. A. P. Martins**, A. M. M. Vieira, 2025; *Temperature-redshift relation in energy-momentum-powered gravity models*; Physical Review D, 111, 043533, 10
124. S. Mathur, **A. R. G. Santos**, Z. R. Claytor, R. A. García, A. Strugarek, A. J. Finley, Q. Noraz, L. Amard, P. G. Beck, A. Bonanno, 2025; *Magnetic Activity Evolution of Solar-like Stars. II. S_{ph}–Ro Evolution of Kepler Main-sequence Targets*; The Astrophysical Journal, 982, 2, id.114
125. B. J. McKee, B. T. Montet, S. W. Yee, J. D. Hartman, J. N. Winn, **J. H. C. Martins**, **A. M. Silva**, A. L. Wallace, 2025; *A Planet Candidate Orbiting near the Hot Jupiter TOI-2818 b Inferred through Transit Timing*; The Astrophysical Journal, 981, 2, 8
126. S. J. Mercier, X. Dumusque, V. Bourrier, K. Al Moulla, M. Cretignier, **W. Dethier**, G. Lo Curto, **P. Figueira**, C. Lovis, F. Pepe et al. (*including:* **N. C. Santos**), 2025; *Studying the variability of the He triplet to understand the detection limits of evaporating exoplanet atmospheres*; Astronomy & Astrophysics, 700, A8, 15
127. L. Mignon, X. Delfosse, N. Meunier, G. Chaverot, R. P. Milburn, X. Bonfils, F. Bouchy, N. Astudillo-Defru, G. Lo Curto, G. Gaisne et al. (*including:* **N. C. Santos**), 2025; *Radial velocity homogeneous analysis of M dwarfs observed with HARPS: II. Detection limits and planetary occurrence statistics*; Astronomy & Astrophysics, 700, A146, 17
128. L. J. Millson, A. -. Broomhall, **A. R. G. Santos**, R. Kiefer, M. Jones, 2025; *Investigation of oscillations above the acoustic cut-off frequency for a sample of Kepler stars. II. Identifying temporal frequency shifts*; Monthly Notices of the Royal Astronomical Society, 537, 2, 1268
129. L. J. Millson, A.-M. Broomhall, **A. R. G. Santos**, R. Kiefer, 2025; *Investigation of oscillations above the acoustic cut-off frequency for a sample of Kepler stars. I. Methodology for detecting stellar pseudo-modes*; Monthly Notices of the Royal Astronomical Society, 536, 3, 3007
130. **H. Miranda**, **C. Pappalardo**, **J. Afonso**, **P. Papaderos**, **C. Lobo**, **A. Paulino-Afonso**, **R. Carvajal**, **I. Matute**, **P. Lagos**, **D. D. Barbosa**, 2025; *Importance of modelling the nebular continuum in galaxy spectra*; Astronomy & Astrophysics, 694, A102, 16
131. **N. A. M. Moedas**, M. Deal, D. Bossini, 2025; *Impact of radiative accelerations on the stellar characterization of FGK-type stars using spectroscopic and seismic constraints*; Astronomy & Astrophysics, 695, A9, 12
132. M. Mondelin, F. Bournaud, J. -C. Cuillandre, S. Codis, C. Stone, M. Bolzonella, J. G. Sorce, M. Kluge, N. A. Hatch, F. R. Marleau et al. (*including:* **F. Buitrago**, **J. Brinchmann**, **I. Tereno**), 2025; *Euclid: Early Release Observations – The surface brightness and colour profiles of the far outskirts of galaxies in the Perseus cluster*; Astronomy & Astrophysics, 699, A214, 28
133. **P. A. G. Monteiro**, **C. J. A. P. Martins**, 2025; *Cosmologically viable solutions in geometric modified gravity*; Classical and Quantum Gravity, 42, 225019
134. **P. Moreno**, M. Areias, R. Rocha, 2025; *A sleek lock-free hash map in an ERA of safe memory reclamation methods*; Parallel Computing, 126, 103162
135. **A. Mota**, S. Koch, D. Matthiae, **N. C. Santos**, M. Cortesão, 2025; *How Habitable Are M Dwarf Exoplanets? Modeling Surface Conditions and Exploring the Role of Melanins in the Survival of Aspergillus niger Spores Under Exoplanet-Like Radiation*; Astrobiology, 25
136. D. Mounzer, **W. Dethier**, C. Lovis, V. Bourrier, A. Psaridi, H. Chakraborty, M. Lendl, R. Allart, J. V. Seidel, M. R. Zapatero Osorio et al. (*including:* **C. J. A. P. Martins**, **J. Rodrigues**, **N. C. Santos**), 2025; *The ESPRESSO transmission spectrum of HD189733 b: Extracting the planetary sodium and lithium signatures amid stellar contamination*; Astronomy & Astrophysics, 700, A41, 21
137. **D. Muñoz Santos**, **C. Pappalardo**, **H. Miranda**, **J. Afonso**, **I. Matute**, **R. Carvajal**, **C. Lobo**, **P. Lagos**, **P. Papaderos**, **A. Paulino-Afonso** et al. (*including:* **A. Chougule**, **D. D. Barbosa**), 2025; *Through the fog: A complementary optical galaxy classification scheme for intermediate redshifts*; Astronomy & Astrophysics, 701, A271, 16
138. F. Murgas, E. Pallé, A. Suárez Mascareño, J. Korth, F. J. Pozuelos, M. J. Hobson, B. Lavie, C. Lovis, **S. G. Sousa**, **D. Bossini** et al. (*including:* **V. Zh. Adibekyan**, **P. Figueira**, **C. J. A. P. Martins**, **N. J. Nunes**, **N. C. Santos**), 2025; *TOI-283 b: A transiting mini-Neptune in a 17.6-day orbit discovered with TESS and ESPRESSO*; Astronomy & Astrophysics, 703, A201, 23
139. B. C. Nagam, J. A. Acevedo Barroso, J. Wilde, I. T. Andika, A. Manjon-Garcia, R. Pearce-Casey, D. Stern, J. W. Nightingale, L. Moustakas, K. McCarthy et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **J. Dinis**, **I. Tereno**), 2025; *Euclid: Finding strong gravitational lenses in the early release observations using convolutional neural networks*; Astronomy & Astrophysics, 702, A130, 18
140. N. Nari, X. Dumusque, N. Hara, A. Suárez Mascareño, M. Cretignier, J. I. González Hernández, A. K. Stefanov, V. M. Passegger, R. Rebolo, F. Pepe et al. (*including:* **N. C. Santos**, **J. P. Faria**, **P. Figueira**, **V. Zh. Adibekyan**, **C. J. A. P. Martins**, **N. J. Nunes**, **A. M. Silva**, **S. G. Sousa**), 2025; *Revisiting the multi-planetary system of the nearby star HD 20794: Confirmation of a low-mass planet in the habitable zone of a nearby G-dwarf*; Astronomy & Astrophysics, 693, A297, 23
141. **A. W. Neitzel**, **T. L. Campante**, D. Bossini, A. Miglio, 2025; *Dissecting stellar populations with manifold learning: I. Validation of the method on a synthetic Milky Way-like galaxy*; Astronomy & Astrophysics, 695, A243, 15
142. M. Nguyen, **V. Zh. Adibekyan**, 2025; *Metallicity Regulates Planet Formation across All Masses*; The Astronomical Journal, 170, 6
143. S. L. Nickerson, N. Rangwala, K. Sung, X. Huang, E. Montiel, C. DeWitt, V. J. M. Le Gouellec, S. W. J. Colgan, J. Dittmann, J. P. Fonfría et al. (*including:* **C. Sousa-Silva**), 2025; *The Discovery of 25 μm Interstellar Methanol*; The Astrophysical Journal, 989, L51, 16
144. C. M. O'Riordan, L. J. Oldham, A. Nersesian, T. Li, T. E. Collett, D. Sluse, B. Altieri, B. Clément, K. G. C. Vasan, S. Rhoades et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **J. Dinis**, **I. Tereno**), 2025; *Euclid: A complete Einstein ring in NGC 6505*; Astronomy & Astrophysics, 694, A145, 13
145. L. Parc, F. Bouchy, N. J. Cook, N. Grieves, E. Artigau, A. L'Heureux, R. Doyon, Y. S. Messias, F. Baron, **S. C. C. Barros** et al. (*including:* **E. Delgado-Mena**, **P. Figueira**, **N. C. Santos**, **M. Abreu**, **K. Al Moulla**, **P. M. H. Branco**, **A. Cabral**, **J. M. Coelho**, **E. A. S. Cristo**, **A. R. Costa Silva**, **J. P. Faria**, **J. Gomes da Silva**, **B. Wehbe**), 2025; *NIRPS and TESS reveal a peculiar system around the M dwarf TOI-756: A transiting sub-Neptune and a cold eccentric giant*; Astronomy & Astrophysics, 702, A138, 25
146. R. Pearce-Casey, B. C. Nagam, J. Wilde, V. Busillo, L. Ulivi, I. T. Andika, A. Manjón-García, L. Leuzzi, P. Matavulj, S. Serjeant et al. (*including:* **A. Paulino-Afonso**, **J. Brinchmann**, **A. C. da Silva**, **J. Dinis**, **I. Tereno**), 2025; *Euclid: Searches for strong gravitational lenses using convolutional neural nets in Early Release Observations of the Perseus field*; Astronomy & Astrophysics, 696, A214, 22

147. **F. C. N. Q. Pimenta**, **C. J. A. P. Martins**, 2025; *Scaling solutions for current-carrying cosmic string networks. II. Biased solutions*; Physical Review D, 112, 023535
148. M. H. Pinsonneault, J. C. Zinn, J. Tayar, A. M. Serenelli, R. A. Garcia, S. Mathur, M. Vrard, Y. Elsworth, B. Mosser, D. Stello et al. (*including:* **A. R. G. Santos**), 2025; *APOKASC-3: The Third Joint Spectroscopic and Asteroseismic Catalog for Evolved Stars in the Kepler Fields*; The Astrophysical Journal Supplement Series, 276, 2, 35
149. **S. R. Pinto**, **C. J. A. P. Martins**, 2025; *Updated constraints on Regge-Teitelboim gravity*; Physical Review D, 112, 023526
150. **S. R. Pinto**, **P. P. Avelino**, 2025; *Deviations from the von Laue condition: Implications for the on-shell Lagrangian of particles and fluids*; Physical Review D, 111, 083556, 10
151. C. V. Pittman, C. C. Espaillat, C. Robinson, T. Thanathibodee, S. Lopez, N. Calvet, Z. Zhu, F. M. Walter, J. Wendeborn, C. F. Manara et al. (*including:* **J. F. Gameiro**), 2025; *The ODYSSEUS Survey. Characterizing Magnetospheric Geometries and Hotspot Structures in T Tauri Stars*; The Astrophysical Journal, 992, 1
152. J. Prathap, A. M. Hopkins, **J. Afonso**, M. Bilicki, M. Cowley, S. M. Croom, Y. Gordon, S. Phillipps, E. M. Sadler, S. S. Shabala et al. (*including:* **R. Carvajal**), 2025; *EMU/GAMA: A new approach to characterising radio luminosity functions*; Publications of the Astronomical Society of Australia, 42, e077, 15
153. B. Prinoth, J. V. Seidel, H. J. Hoeijmakers, B. M. Morris, M. Baratella, N. W. Borsato, **Y. C. Damasceno**, V. Parmentier, D. Kitzmann, E. Sedaghati et al. (*including:* **N. C. Santos**), 2025; *Titanium chemistry of WASP-121 b with ESPRESSO in 4-UT mode*; Astronomy & Astrophysics, 694, A284, 14
154. H. Rauer, C. Aerts, J. Cabrera, M. Deleuil, A. Erikson, L. Gizon, M.-J. Goupil, A. Heras, T. Walloschek, J. Lorenzo-Alvarez et al. (*including:* **N. C. Santos**, **M. Abreu**, **V. Zh. Adibekyan**, **A. Antoniadis-Karnavas**, **P. P. Avelino**, **D. Bossini**, **A. Cabral**, **T. L. Campante**, **M. S. Cunha**, **S. C. C. de Barros**, **E. Delgado-Mena**, **O. Demangeon**, **E. Duarte**, **J. P. Faria**, **J. Gomes da Silva**, **N. A. M. Moedas**, **M. J. P. F. G. Monteiro**, **F. Pereira**, **F. Pinheiro**, **A. R. G. Santos**, **S. G. Sousa**), 2025; *The PLATO mission*; Experimental Astronomy, 59, 26
155. **J. Rodrigues**, **S. C. C. Barros**, **N. C. Santos**, J. Davoult, M. Attia, A. Castro-González, **S. G. Sousa**, **O. D. S. Demangeon**, M. J. Hobson, **D. Bossini** et al. (*including:* **V. Zh. Adibekyan**, **A. M. Silva**, **P. Figueira**, **C. J. A. P. Martins**, **N. J. Nunes**), 2025; *TOI-512: Super-Earth transiting a K-type star discovered by TESS and ESPRESSO*; Astronomy & Astrophysics, 695, A237, 12
156. **I. Yu. Rybak**, **L. Sousa**, 2025; *Stochastic gravitational wave background from chiral superconducting cosmic strings*; Physical Review D, 111
157. **I. Yu. Rybak**, 2025; *Decay of Nambu–Goto cosmic string loops via coupling to a massive Kalb–Ramond field*; The European Physical Journal C, 85, 1121
158. T. Saifollahi, K. Voggel, A. Lançon, M. Cantiello, M. A. Raj, J. -C. Cuillandre, S. S. Larsen, F. R. Marleau, A. Venhola, M. Schirmer et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **J. Dinis**, **I. Tereno**), 2025; *Euclid: Early Release Observations – Globular clusters in the Fornax galaxy cluster, from dwarf galaxies to the intracluster field*; Astronomy & Astrophysics, 697, A10, 28
159. T. Saifollahi, A. Lançon, M. Cantiello, J. -C. Cuillandre, M. Bethermin, D. Carollo, P.-A. Duc, A. Ferré-Mateu, N. A. Hatch, M. Hilker et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **I. Tereno**), 2025; *Euclid: Early Release Observations — Interplay between dwarf galaxies and their globular clusters in the Perseus galaxy cluster*; Astronomy & Astrophysics, 703, A184, 24
160. **A. R. G. Santos**, D. Godoy-Rivera, S. Mathur, S. N. Breton, R. A. García, **M. S. Cunha**, 2025; *Signature of spin-down stalling in stellar magnetic activity: The case of the open cluster NGC 6811*; Astronomy & Astrophysics, 697, A177, 15
161. **N. C. Santos**, **A. Cabral**, **I. M. Leite**, A. Smette, **M. Abreu**, **D. Castro Alves**, **J. H. C. Martins**, **M. A. Monteiro**, **A. C. da Silva**, **B. Wehbe** et al. (*including:* **G. Avila**, **R. Clara**, **R. Gafeira**, **P. Moreno**, **A. Oliveira**, **K. Al Moulla**, **V. Zh. Adibekyan**, **A. Barka**, **S. C. C. Barros**, **P. M. H. Branco**, **E. A. S. Cristo**, **Y. C. Damasceno**, **O. Demangeon**, **W. Dethier**, **E. Gonçalves**, **J. Peralta Lucero**, **J. Rodrigues**, **C. San Nicolas Martinez**, **A. R. G. Santos**, **S. G. Sousa**, **P. T. P. Viana**), 2025; *PoET: the Paranal solar ESPRESSO Telescope*; The Messenger, 194, 21
162. N. Schanche, G. Hébrard, K. G. Stassun, B. Hord, K. Barkaoui, A. Bieryla, D. Ciardi, K. A. Collins, A. Collier Cameron, J. D. Hartman et al. (*including:* **S. C. C. Barros**, **O. D. S. Demangeon**, **S. G. Sousa**), 2025; *A Swarm of WASP Planets: Nine Giant Planets Identified by the WASP Survey*; The Astronomical Journal, 169, 334, 22
163. T. M. Schmidt, A. Reiners, M. T. Murphy, G. Lo Curto, **C. J. A. P. Martins**, P. Huke, E. Blucher, 2025; *Validation of the ESPRESSO wavelength calibration using iodine absorption cell spectra*; Monthly Notices of the Royal Astronomical Society, 539, 4, 18
164. J. V. Seidel, B. Prinoth, L. Pino, L. A. Dos Santos, H. Chakraborty, V. Parmentier, E. Sedaghati, J. P. Wardenier, C. Farret Jentink, M. R. Zapatero Osorio et al. (*including:* **Y. C. Damasceno**, **N. C. Santos**, **S. G. Sousa**), 2025; *Vertical structure of an exoplanet's atmospheric jet stream*; Nature, 639, 902
165. C. Sengupta, **T. C. Scott**, H. Chen, H. Yoon, Y. Chandola, M. Li, G. I. G. Józsa, O. I. Wong, Y. -Z. Ma, **P. Lagos**, R. Kale, D. Tramonte, 2025; *MeerKAT H I Observations of Low Surface Brightness/Ultradiffuse Galaxy Candidates Projected around Two Southern Loose Groups*; The Astrophysical Journal, 984, L46, 6
166. **A. M. Silva**, **N. C. Santos**, J. P. Faria, **J. H. C. Martins**, **E. A. S. Cristo**, **S. G. Sousa**, **P. T. P. Viana**, E. Artigau, **K. Al Moulla**, A. Castro-González et al. (*including:* **D. F. M. Folha**, **P. Figueira**, **O. D. S. Demangeon**, **T. L. Campante**, **B. Wehbe**, **A. R. Costa Silva**, **J. Rodrigues**, **A. Cabral**, **C. J. A. P. Martins**, **N. J. Nunes**), 2025; *A systematic bias in template-based radial velocity extraction algorithms*; Astronomy & Astrophysics, 700, A93, 17
167. A. M. S. Smith, Sz. Csizmadia, V. Van Grootel, M. Lendl, C. M. Persson, G. Olofsson, D. Ehrenreich, M. N. Günther, A. Heitzmann, **S. C. C. Barros** et al. (*including:* **O. Demangeon**, **S. G. Sousa**, **N. C. Santos**), 2025; *CHEOPS observations confirm nodal precession in the WASP-33 system*; Astronomy & Astrophysics, 693, A128, 18
168. **B. Soares**, **V. Zh. Adibekyan**, C. Mordasini, M. Deal, **S. G. Sousa**, **E. Delgado-Mena**, **N. C. Santos**, C. Dorn, 2025; *Assessing the processes behind planet engulfment and its imprints*; Astronomy & Astrophysics, 693, A47, 12
169. H. J. Souchereau, J. D. P. Kenney, P. Jáchym, M. Sun, W. J. Cramer, M. Yagi, A. Boselli, E. Brinks, F. Combes, L. Cortese et al. (*including:* **T. C. Scott**), 2025; *ALMA-JELLY. I. High Resolution CO(2–1) Observations of Ongoing Ram Pressure Stripping in NGC 4858 Reveal Asymmetrical Gas Tail Formation and Fallback*; The Astrophysical Journal, 988, 72, 21
170. A. K. Stefanov, J. I. González Hernández, A. Suárez Mascareño, N. Nari, R. Rebolo, M. Damasso, A. Castro-González, M. R. Zapatero Osorio, C. Allende Prieto, **A. M. Silva**, **C. J. A. P. Martins**, 2025; *A sub-Earth-mass planet orbiting Barnard's star: No evidence of transits in TESS photometry*; Astronomy & Astrophysics, 693, L3, 7
171. A. K. Stefanov, J. I. González Hernández, A. Suárez Mascareño, R. Rebolo, N. Nari, J. M. Mestre, **S. G. Sousa**, H. M. Tabernero, M. R. Zapatero Osorio, P. Figueira et al. (*including:* **A. M. Silva**, **N. C. Santos**, **C. J. A. P. Martins**), 2025;

Stellar-activity analysis of the nearby M dwarf GJ 526: Multi-dimensional Gaussian-process modelling of RV, FWHM, and S-index; Astronomy & Astrophysics, 703, a245, 19

172. V. P. Stefanov, D. S. Mogilevtsev, **I. Yu. Rybak**, A. Stefanov, 2025; *Testing classicality of gravity by gravitation decoherence*; Physical Review D, 111, 065026, 11
173. Euclid Collaboration, L. Zalesky, C. J. R. McPartland, J. R. Weaver, S. Toft, D. B. Sanders, B. Mobasher, N. Suzuki, I. Szapudi, I. Valdes et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **J. Dinis**, **I. Tereno**, **C. S. Carvalho**, **C. J. A. P. Martins**), 2025; *Euclid preparation: LXI. Cosmic Dawn Survey: 'Pre-launch' multiwavelength catalogues for Euclid Deep Field North and Euclid Deep Field Fornax*; Astronomy & Astrophysics, 695, A229, 27
174. A. Suárez Mascareño, E. Artigau, L. Mignon, X. Delfosse, N. J. Cook, F. Bouchy, R. Doyon, J. I. González Hernández, T. Vandal, I. de Castro Leão et al. (*including:* **J. P. Faria**, **S. C. C. Barros**, **E. Delgado-Mena**, **P. Figueira**, **N. C. Santos**, **M. Abreu**, **A. Cabral**, **J. Coelho**, **E. A. S. Cristo**, **A. R. Costa Silva**, **J. Gomes da Silva**, **B. Wehbe**), 2025; *Diving into the planetary system of Proxima with NIRPS: Breaking the metre per second barrier in the infrared*; Astronomy & Astrophysics, 700, A11, 31
175. **D. A. Tamayo Ramirez**, E. Urquilla, I. Gómez-Vargas, 2025; *Equivalence of dark energy models: A theoretical and Bayesian perspective*; Physics of the Dark Universe, 48, 101901
176. **J. Teixeira**, **V. Zh. Adibekyan**, D. Bossini, 2025; *Where in the Milky Way Do Exoplanets Preferentially Form?*; Astronomische Nachrichten, 346, 2
177. L. Thomas, G. Hébrard, H. Kellermann, J. Korth, N. Heidari, T. Forveille, **S. G. Sousa**, L. Schöller, A. Riffeser, C. Gössl, 2025; *TOI-5108 b and TOI 5786 b: Two transiting sub-Saturns detected and characterized with TESS, MaHPS, and SOPHIE*; Astronomy & Astrophysics, 694, A143, 23
178. A. Trost, **C. M. J. Marques**, S. Cristiani, G. Cupani, S. Di Stefano, V. D'Odorico, F. Guarneri, **C. J. A. P. Martins**, D. Milaković, L. Pasquini et al. (*including:* **N. J. Nunes**, **N. C. Santos**), 2025; *The ESPRESSO Redshift Drift Experiment: I. High-resolution spectra of the Lyman-a forest of QSO J052915.80-435152.0*; Astronomy & Astrophysics, 699, A159, 14
179. M. Tsantaki, L. Magrini, C. Danielski, D. Bossini, D. Turrini, **N. A. M. Moedas**, C. P. Folsom, H. Ramler, K. Biazzo, **T. L. Campante** et al. (*including:* **E. Delgado-Mena**, **S. G. Sousa**), 2025; *Ariel stellar characterisation: III. Fast rotators and new FGK stars in the Ariel mission candidate sample*; Astronomy & Astrophysics, 697, A102, 18
180. D. J. Turner, P. A. Giles, A. K. Romer, J. Pilling, T. K. Lingard, R. Wilkinson, M. Hilton, E. Upsdell, R. Al-Serkal, T. Cheng et al. (*including:* **P. T. P. Viana**), 2025; *The XMM Cluster Survey: automating the estimation of hydrostatic mass for large samples of galaxy clusters – I. Methodology, validation, and application to the SDSSRM-XCS sample*; Monthly Notices of the Royal Astronomical Society, 537, 2, 1404
181. S. Ulmer-Moll, S. Gill, R. Brahm, A. Claringbold, M. Lendl, **K. Al Moulla**, D. R. Anderson, M. Battley, D. Bayliss, A. Bonfanti et al. (*including:* **P. Figueira**, **S. G. Sousa**), 2025; *Detection and characterisation of a 106-day transiting Jupiter: TOI-2449 b/NGTS-36 b*; Astronomy & Astrophysics, 703, A258, 16
182. **A. M. A. Vale**, **A. Paulino-Afonso**, **A. Humphrey**, **P. A. C. Cunha**, B. Ribeiro, **B. Cerqueira**, **R. Carvajal**, **J. Fonseca**, 2025; *A gradient boosting and broadband approach to finding Lyman-a emitting galaxies beyond narrowband surveys*; Astronomy & Astrophysics, 701, A223, 18
183. V. Vaulato, S. Pelletier, D. Ehrenreich, R. Allart, **E. A. S. Cristo**, M. Steiner, X. Dumusque, H. Chakraborty, M. Lendl, A. Srivastava et al. (*including:* **S. C. C. Barros**, **N. C. Santos**, **A. R. Costa Silva**, **J. Gomes da Silva**), 2025; *Hydride ion continuum hides absorption signatures in the NIRPS near-infrared transmission spectrum of the ultra-hot gas giant WASP-189b*; Astronomy & Astrophysics, 700, A9, 30
184. V. Vaulato, M. J. Hobson, R. Allart, S. Pelletier, J. P. Wardenier, H. Chakraborty, D. Ehrenreich, N. Nari, M. Steiner, X. Dumusque et al. (*including:* **S. C. C. Barros**, **E. Delgado-Mena**, **N. C. Santos**, **K. Al Moulla**, **A. R. Costa Silva**, **E. A. S. Cristo**), 2025; *Atmospheric composition and circulation of the ultra-hot Jupiter WASP-121b with joint NIRPS, HARPS and CRIRES+ transit spectroscopy*; Astronomy & Astrophysics, 703, A251, 18
185. V. Villanueva, M. Blaña, A. D. Bolatto, M. Rubio, E. Tarantino, R. Herrera-Camus, A. Burkert, **D. A. D. Vaz**, J. I. Read, G. Galaz, 2025; *The CHIMERA Survey: The first CO detection in Leo T, the lowest mass known galaxy still hosting cold molecular gas*; Astronomy & Astrophysics, 699, L11, 8
186. J. J. Blanco-Pillado, Y. Cui, S. Kuroyanagi, M. Lewicki, G. Nardini, M. Pieroni, **I. Yu. Rybak**, **L. Sousa**, J. M. Wachter, 2025; *Gravitational waves from cosmic strings in LISA: reconstruction pipeline and physics interpretation*; Journal of Cosmology and Astroparticle Physics, 2025, 006, 61
187. J. R. Weaver, S. Taamoli, C. J. R. McPartland, L. Zalesky, N. Allen, S. Toft, D. B. Sanders, H. Atek, R. A. A. Bowler, D. Stern et al. (*including:* **J. Brinchmann**, **A. C. da Silva**, **J. Dinis**, **I. Tereno**), 2025; *Euclid: Early Release Observations – NISP-only sources and the search for luminous $z = 6$–8 galaxies*; Astronomy & Astrophysics, 697, A16, 17
188. **C. M. Winckler**, **P. P. Avelino**, **L. Sousa**, 2025; *Biased domain walls and the origin of early massive structures*; Physical Review D, 112, 123506
189. E. Palle, K. Biazzo, E. Bolmont, P. Mollière, K. Poppenhaeger, J. L. Birkby, M. Brogi, G. Chauvin, A. Chiavassa, J. Hoeijmakers et al. (*including:* **P. Machado**, **N. C. Santos**, **S. C. C. Barros**), 2025; *Ground-breaking exoplanet science with the ANDES spectrograph at the ELT*; Experimental Astronomy, 59, 29
190. S. Zazzera, **J. Fonseca**, T. Baker, C. Clarkson, 2025; *Gravitational waves and galaxies cross-correlations: a forecast on GW biases for future detectors*; Monthly Notices of the Royal Astronomical Society, 537, 2, 1912

Proceedings published in 2025

1. **I. A. Costa**, H. Lopes, **M. J. P. F. G. Monteiro**; 2025; *Astronomy as a gateway science for education: An analysis of the portuguese compulsory syllabus*; INTED2025 Proceedings, IATED, 3446
2. **I. A. P. M. da Costa**, **A. R. Silva**, **F. A. L. Pires**; 2025; *Mapeamento de envolvimento público: uma via para democratizar o acesso à ciência*; SciComPt2024 - Livro de Resumos Alargados; (Eds.) Santos-Carvalho, Ana; Gerardo, Heloísa; Navalhas, Inês; Ferreira, Miguel, SciComPt
3. C. Gourvès, A. Strugarek, C. Moutou, J. Morin, P. Petit, A. Dyrek, S. N. Breton, R. A. García, A. F. Lanza, S. Mathur, **A. R. G. Santos**; 2025; *Towards the confirmation of a new ultra-short period planet orbiting a M-type star*; SF2A-2025: Proceedings of the Annual meeting of the French Society of Astronomy and Astrophysics.; (Eds.)A. Siebert, K. Baillié, M. Béthermin, F.

Cantalloube, E. Josselin, N. Lagarde, J. Malzac, J. Richard, L. Selliez, O. Venot, Société Française d'Astronomie et d'Astrophysique (SF2A), 461

4. **P. Moreno**, M. Areias, R. Rocha; 2025; *On Exploring Safe Memory Reclamation Methods with a Simplified Lock-Free Hash Map Design*; Euro-Par 2024: Parallel Processing Workshops; (Eds.)Silvina Caino-Lores, Demetris Zeinalipour, Thaleia Dimitra Doudali, David E. Singh, Gracia Ester Martín Garzón, Leonel Sousa, Diego Andrade, Tommaso Cucinotta, Donato D'Ambrosio, Patrick Diehl, Manuel F. Dolz, Admela Jukan, Raffaele Montella, Matteo Nardelli, Marta Garcia-Gasulla, Sarah Neuwirth, Springer Cham
5. **N. C. Santos**; 2025; *Céu azul em dias de inverno*; Assim nasce uma ideia: o que dizem os cientistas sobre o momento da descoberta; (Eds.) Vitor Cardoso e Ana Carvalho, Gradiva

Communications

International Scientific Communications in 2025

1. **A. Barka**, **E. A. S. Cristo**, **A. R. G. Santos**, **N. C. Santos**, **K. Al Moulla**; 2025; *Comparing observed and SOAP4.0-simulated solar RVs: how close are we to accurate modeling?*; The Sixth Workshop on Extremely Precise Radial Velocities, Porto, Portugal
2. **A. Branco**, **C. Sousa-Silva**, W. Broussard, S. Ranjan, E. W. Schwieterman, **P. Machado**; 2025; *Assessing the Impact of Varying HSO and HNO Cross-Sections on Photochemical Models: Implications for Spectral Characterization of Terrestrial Exoplanets*; EPSC-DPS Joint Meeting 2025, Helsinki, Finland
3. **A. Branco**, **P. Machado**, **O. Demangeon**, **T. de Azevedo Silva**, **C. Sousa-Silva**, T. Widemann, P. Tanga, L. Mendoza; 2025; *High-Resolution Transmission Spectroscopy of Venus: A Proxy for Atmospheric Characterization of Earth-Sized Exoplanets*; EPSC-DPS Joint Meeting 2025, Helsinki, Finland
4. **A. L. Morozova**, **S. Chiaha**, **T. Barata**, **J. J. G. Lima**; 2025; *Ionospheric response to geomagnetic storms of different intensity in the eastern north Atlantic mid – latitudinal zone: comparison between Lisbon, Azores and Madeira.*; IAGA/IASPEI 2025, Lisbon, Portugal
5. **A. M. Silva**; 2025; *A systematic bias in template-based RV extraction algorithms*; Planets throughout the Habitable Zone, Online
6. **A. M. Silva**; 2025; *A systematic bias in template-based RV extraction algorithms*; EPRV6, Porto, Portugal
7. **A. Mota**, C. Magalhães, **N. C. Santos**, **M. Cortesão**; 2025; *Cataloguing the Growth Limits of Cultured Prokaryotes*; Blue Think Conference 2025, Porto, Portugal
8. **A. R. G. Santos**, T. S. Metcalfe, O. Kochukhov, T. R. Ayres, **R. Gafeira**, **T. L. Campante**; 2025; *Magnetic Evolution Beyond the Main Sequence: a Born-again Dynamo in β Hydri*; 9th TESS/16th Kepler Asteroseismic Science Consortium Workshop, Vienna, Austria
9. **A. R. G. Santos**, T. S. Metcalfe, O. Kochukhov, T. R. Ayres, **R. Gafeira**, **T. L. Campante**, H. -J. Gerber; 2025; *Magnetic Evolution Beyond the Main Sequence: a Born-again Dynamo in β Hydri*; HAYDN Workshop, Bologna, Italy
10. **A. R. G. Santos**; 2025; *Seismic Signatures of Magnetic Activity*; ISSI meeting: Multi-scale variability in solar and stellar magnetic cycles, Bern, Switzerland
11. A. R. G. Santos; 2025; *Stellar magnetic activity, rotation and their evolution*; ISSI meeting: Multi-scale variability in solar and stellar magnetic cycles, Bern, Switzerland
12. **B. Soares**; 2025; *Neither rocky nor icy: Exploring the nature of steam worlds*; EPSC-DPS Joint Meeting 2025, Helsinki, Finland
13. **B. Soares**; 2025; *Neither rocky nor icy: Exploring the nature of steam worlds*; ExWi, Bern, Switzerland
14. **C. J. A. P. Martins**; 2025; *Varying fundamental constants cosmography*; IberiCos 2025, Department of Physics (University of Coimbra), Portugal
15. **C. M. J. Marques**; 2025; *A Redshift Drift Tale: From ESPRESSO to ELTs Era*; European Astronomical Society Annual Meeting, Online,
16. **C. M. J. Marques**; 2025; *A Redshift Drift Tale: From ESPRESSO to HWO*; Towards the Habitable Worlds Observatory: Visionary Science and Transformational Technology, Online,
17. **C. M. Winckler**, P. P. Avelino, L. Sousa; 2025; *Structure Formation from Cosmic Domain Wall Collapses*; IberiCos 2025, Coimbra, Portugal
18. **C. M. Winckler**, P. P. Avelino, L. Sousa; 2025; *Structure Formation From Cosmic Domain Wall Collapses*; MaNiTou Summer School on Gravitational Waves, Marseille, France
19. **C. San Nicolas Martinez**, **N. C. Santos**, **V. Zh. Adibekyan**, **K. Al Moulla**, **A. M. Silva**, **S. G. Sousa**; 2025; *The Path to 10 cm/s RV Precision: a new line-by-line code*; The Sixth Workshop on Extremely Precise Radial Velocities, Porto, Portugal
20. **C. San Nicolas Martinez**, **N. C. Santos**, **V. Zh. Adibekyan**, **K. Al Moulla**, **A. M. Silva**, **S. G. Sousa**; 2025; *A novel line-by-line RV code: Paving the way for Earth-like planet discovery*; 2025 Sagan Summer Workshop, Caltech (online attendance), USA
21. D. Tirsch, J. Hernández-Bernal, A. Sánchez-Lavega, **P. Machado**, **F. Brasil**, A. Nair, M. S. Encarnação; 2025; *Cloud Morphologies on Mars: A Closer Look through the HRSC Cloud Atlas*; EPSC-DPS Joint Meeting 2025, Helsinki, Finland
22. **D. Vaz**; 2025; *The Binary Fraction of Ultra-Faint Dwarfs*; MUSE Busy Week, Geneva, Switzerland
23. **D. Vaz**; 2025; *The MUSE-Faint Survey: A survey of Ultra-Faint Dwarfs with MUSE*; 10 Years of Ultra-Diffuse Galaxies: Past Perspectives and Future Prospects, Benasque, Spain
24. **D. Vaz**; 2025; *The skewness of metallicity distributions in Ultra-Faint Dwarfs*; MUSE Busy Week, Geneva, Switzerland
25. F. Brasil, **P. Machado**, **G. Gilli**, D. Tirsch, A. Cardesín-Moinelo, J. C. Silva, **D. C. Espadinha**, J. Carter, C. Wilson, P. Martín; 2025; *Morphological and dynamical analysis of Martian Gravity Waves using MEx/HRSC observations*; EPSC-DPS Joint Meeting 2025, Helsinki, Finland

26. **F. S. Barros**, L. Baddeley, R. F. Pinto, **J. J. G. Lima**, S. Haaland, A. Restivo; 2025; *A Clustering Analysis of 26 Years of EISCAT Svalbard Observation*; ESWW 2025, Florence, Italy
27. **I. A. Costa**; 2025; *In-Service Teacher Training on Inquiry-Based Learning: Using Astronomy as a Gateway Science in Formal Education*; AstroEdu: Astronomy Education Conference 2025, Melborne, Austrália
28. **I. A. Costa**; 2025; *Showcase Ciência Cidadã*; 4ª Jornadas de Comunicação de Ciência, Online,
29. **I. M. Rolo**; 2025; *A comparative magnetic field analysis of pulsating and non-pulsating Ap stars*; 12th Iberian Meeting on Asteroseismology, Luso, Portugal
30. **I. M. Rolo**; 2025; *The interplay between magnetism and oscillations in Ap stars*; 9th TESS/16th Kepler Asteroseismic Science Consortium Workshop, Vienna, Austria
31. **I. Santos de Sousa**, J. Azevedo, C. Verseux, P. Tamagnini, C. Magalhães, **M. Cortesão**; 2025; *Sustainable Space Habitats: Cyanobacterial Biomass as Feedstock for Fungal Biotechnology*; Blue Think Conference, Porto, Portugal
32. **J. Amaral**, **A. R. G. Santos**, **M. S. Cunha**, R. A. Garcia; 2025; *Shedding light on the complexities of stellar rotation*; 12th Iberian Meeting on Asteroseismology, Porto, Portugal
33. **J. Brinchmann**; 2025; *MUSE-Faint - The binaries, dark matter and stars in the faintest galaxies*; Joint Astronomy Colloquium, ESO Garching, Germany
34. **J. Fonseca**; 2025; *Beyond LCDM with the SKA Observatory – I, Unveiling the Secrets of the Early Universe*; 2025 SKAO General Science Meeting, Gorlitz, Germany
35. **J. Fonseca**; 2025; *Cosmology with HI intensity mapping with the SKAO and pre- cursors (IT)*; Square Kilometre Array - Cutting Edge Astronomical Facilities & Advanced Computing, Évora, Portugal
36. **J. Fonseca**; 2025; *Relativistic Effects & PNG: A quest with current and forthcoming surveys*; Big Data, Big Questions: The Future of Cosmological Surveys, Garching, Germany
37. **J. Peralta Lucero**; 2025; *Effect of stellar non-occulted spots on high-resolution transmission spectroscopy*; The Sixth Workshop on Extremely Precise Radial Velocities, Porto, Portugal
38. **J. Peralta Lucero**; 2025; *Effect of stellar spots on high-resolution transmission spectroscopy*; Seminars and Colloquia at ESO Santiago, Santiago, Chile
39. **J. Peralta Lucero**; 2025; *Effect of stellar spots on the high-resolution transmission spectra of an Earth - like planet in the habitable zone of a Sun-like star*; Planets throughout the Habitable Zone, Marseille, France
40. **K. Al Moulla**, X. Dumusque, M. Cretignier, J. -B. Delisle, F. Lienhard, A. Mortier, A. Hahlin, B. Zaire, O. Kochukhov; 2025; T*esting a Universal Activity Indicator with HARPS-N, HARPS and NIRPS Solar Observations*; The Sixth Workshop on Extremely Precise Radial Velocities, Porto, Portugal
41. **L. Sousa**; 2025; *The stochastic gravitational wave background generated by superconducting cosmic strings*; Gravitational Waves as probes of beyond the standard model physics 4, Warsaw, Poland
42. **L. Sousa**; 2025; *The stochastic gravitational wave background generated by superconducting cosmic strings*; Numerical Simulations of Early Universe Sources of Gravitational Waves, Stockholm, Sweden
43. L. Sousa; 2025; *Update on the cosmic strings project*; 12th LISA Cosmology Working Group Workshop, Tallin, Estonia
44. **M. S. Cunha**; 2025; *Back to Basics: the power of analytical tools in probing stellar interiors*; IAStrophysical Waves, Institute for Advanced Study, Princeton, USA
45. **M. S. Cunha**; 2025; *MSAP5-1: Introduction*; HOW#5: Selection and Validation of stellar products, Paris, France
46. **O. Demangeon**; 2025; *Illuminating Exoplanetary Atmospheres: Insights from the CHEOPS Phase Curves program*; European Astronomical Society Annual Meeting, Cork, Ireland
47. **P. M. H. Branco**, **N. C. Santos**, J. Gomes da Silva; 2025; *Comparison of the Effect of SolarActivity on RV at Different Activity Levels*; The Sixth Workshop on Extremely Precise Radial Velocities, Porto, Portugal
48. **P. Papaderos**; 2025; *IOSDC Team Updates*; Fourth ARRAKIHS AMC Meeting, Vienna, Austria
49. **R. Costa**, **T. L. Campante**, **M. J. P. F. G. Monteiro**, M. Deal; 2025; *Studying the impact of modifying the opacity profile on the modelling of main-sequence stars*; 12th Iberian Meeting on Asteroseismology, Luso, Portugal
50. **R. Heilemann**, **C. J. A. P. Martins**, **J. R. C. C. C. Correia**; 2025; *Domain wall evolution beyond quartic potentials: The Sine-Gordon and Christ-Lee potentials*; IberiCos 2025, Coimbra, Portugal
51. **S. C. C. Barros**; 2025; *Detecting tidal deformation and tidal decay*; Detection and Dynamics of Exoplanets, Coimbra, Portugal
52. **S. Chiaha**, **A. L. Morozova**, **T. Barata**, **J. Lima**; 2025; *Ionospheric response to geomagnetic storms of different intensity in the Eastern North Atlantic mid- latitudinal zone: comparison between Lisbon, Azores and Madeira*; ESWW 2025, Vasaplan, Skolgatan 59, 903 29 Umeå (online), Sweden
53. **S. G. Sousa**; 2025; *CHEOPS TS3 report*; CHEOPS Science Team Meeting #34, European Space Agency (ESA), European Space Research and Technology Centre (ESTEC), Netherlands
54. **S. G. Sousa**; 2025; *CHEOPS TS3 report*; CHEOPS Science Team Meeting #35, Online
55. **S. G. Sousa**; 2025; *CHEOPS TS3 report*; CHEOPS Science Team Meeting #36, Graz, Áustria
56. **S. G. Sousa**; 2025; *CHEOPS TS3 report*; Science Team Meeting #37, Online
57. S. Mikolaitis, **E. M. P. S. Moreira**, C. Viscasillas Vazquez; 2025; *MW-Gaia Educational Activities and the Legacy*; European Astronomical Society Annual Meeting, Ireland, Cork
58. **S. Mukovnikov**, **L. Sousa**; 2025; *Analytical approximations to the stochastic gravitational wave background from cosmic strings with friction*; 19th Iberian Cosmology Meeting, Coimbra, Portugal
59. **S. Mukovnikov**, L. Sousa; 2025; *Gravitational waves from cosmic strings with friction*; XXVI SIGRAV Conference on General Relativity and Gravitation, University of Milano-Bicocca, Italy
60. **T. L. Campante**; 2025; *Advancing cool-dwarf asteroseismology with Extremely Precise Radial Velocities (EPRVs)*; 9th TESS/16th Kepler Asteroseismic Science Consortium Workshop, Vienna Woods, Austria
61. **T. L. Campante**; 2025; *EPRV asteroseismology with ESPRESSO: an empirical mode-amplitude scaling for K dwarfs*; PLATO WP 126 Meeting, Toulouse, France

62. **T. L. Campante**; 2025; *Stellar Astrophysics Research Group @IA*; 12th Iberian Meeting on Asteroseismology, Luso, Portugal
63. **T. Monteiro**, J. Gomes da Silva, E. Delgado Mena, **N. C. Santos**; 2025; *Analysis of NIR activity indices for exoplanet detection and characterization*; The 6th Workshop on Extreme Precision Radial Velocities, Porto, Portugal
64. **T. Monteiro**, J. Gomes da Silva, E. Delgado Mena, **N. C. Santos**; 2025; *Analysis of NIR activity indices for exoplanet detection and characterization*; Exploring Star-Planet-Disk Connections Conference, Tartu, Estonia
65. **T. Monteiro**, J. Gomes da Silva, E. Delgado Mena, **N. C. Santos**; 2025; *Analysis of NIR activity indices for exoplanet detection and characterization*; 2025 Sagan Summer Workshop, California Institute of Technology, Pasadena, CA (remote), Usa
66. V. Zh. Adibekyan; 2025; *From Exoplanets to Stars and the Galaxy*; External Armenian Astronomical Society Conference 2025, Online,
67. **V. Zh. Adibekyan**; 2025; *From Stellar Atmospheres to Planetary Interiors*; Exploring Star-Disk- Planet Connections Conference, Tartu, Estonia
68. **V. Zh. Adibekyan**; 2025; *From Stellar Exteriors to Planetary Interiors*; European Astronomical Society Annual Meeting, Cork, Ireland
69. **W. Dethier**; 2025; *Residual Stellar Biases in Transmission Spectroscopy: A Caution for Atmospheric Characterization of Planets in the Habitable Zone*; Plato - ESP2025 Planets throughout the habitable zone, Marseille, France
70. **Y. C. Damasceno**; 2025; *Atmospheric composition and dynamics of the ultra-hot Jupiter WASP-178 b*; A New Era in Exoplanet Atmosphere Observation and Characterisation, Bad Honnef Physics School, Germany
71. **Y. C. Damasceno**; 2025; *Determining the atmospheric composition of the ultra-hot Jupiter WASP-178 b with ESPRESSO*; VIII Planetary Science & Solar System Exploration Congress, Málaga, Spain

National Scientific Communications in 2025

1. **A. Barka**, **N. C. Santos**, **A. R. G. Santos**, **E. A. S. Cristo**; 2025; *Modelling magnetic solar activity with SOAP4.0: improving RV precision for exoplanet detection*; XXXV - Encontro Nacional de Astronomia e Astrofísica, Lisboa, Portugal
2. **A. Branco**, **C. Sousa-Silva**, W. Broussard, S. Ranjan, E. W. Schwieterman, **P. Machado**; 2025; *Exploring the Impact of HSO and HNO Cross-Section Variability on Photochemical Modelling and its Implications for Spectral Characterization of Terrestrial Exoplanets*; EANA 2025, Lisboa, Portugal
3. **A. Cabral**, **N. C. Santos**, **A. M. Silva**, A. Oliveira, **B. Wehbe**, **D. Castro Alves**, **J. H. C. Martins**, **M. Abreu**, **M. A. Monteiro**, **P. Moreno**, **R. Clara**, **R. Gafeira**, **W. Dethier**, **A. Barka**, **K. Al Moulla**, **C. San Nicolas Martinez**; 2025; *PoET, The Paranal solar ESPRESSO Telescope: Countdown to installation*; XXXV - Encontro Nacional de Astronomia e Astrofísica, Lisboa, Portugal
4. **A. M. Silva**; 2025; *A Quest to Detect a Star Velocity: Radial Velocity Extraction and Associated Challenges*; XXXV - Encontro Nacional de Astronomia e Astrofísica, Lisboa, Portugal
5. **A. M. Silva**; 2025; *Python for data analysis*; Physis Week 2025, Porto, Portugal
6. **A. Mota**, C. Magalhães, **N. C. Santos**, **M. Cortesão**; 2025; *Cataloguing the Limits of Life and Modelling Potential Niches on Mars and Exoplanets*; EANA 2025, Lisboa, Portugal
7. **A. Mota**, C. Magalhães, **N. C. Santos**, **M. Cortesão**; 2025; *Growth of an Arctic Yeast under Simulated Icy Moon Brines: Implications for Habitability*; XVII Conferência Portuguesa de Ciências Polares, Lisboa, Portugal
8. **A. R. G. Santos**; 2025; *Estrelas em Movimento: Rotação e Magnetismo Estelar*; Astrobiologia: Entre Estrelas e Microrganismos, Porto, Portugal
9. **C. M. Winckler**, P. P. Avelino, L. Sousa; 2025; *Structure Formation from Cosmic Domain Wall Collapses*; XXXV - Encontro Nacional de Astronomia e Astrofísica, Lisboa, Portugal
10. **C. San Nicolas Martinez**, **N. C. Santos**, **V. Zh. Adibekyan**, **K. Al Moulla**, **A. M. Silva**, **S. G. Sousa**; 2025; *Towards Achieving cm/s RV Precision with a New Line-by-Line Code*; XXXV - Encontro Nacional de Astronomia e Astrofísica, Lisboa, Portugal
11. **I. A. Costa**, C. Morais, **M. J. P. F. G. Monteiro**; 2025; *A ciência cidadã nas escolas como via para a democratização do acesso à ciência*; ENCC2025, Oeiras, Portugal
12. **I. A. Costa**, **M. J. P. F. G. Monteiro**; 2025; *O ensino da astronomia na escolaridade obrigatória – um roteiro para o futuro, baseado no diagnóstico do presente*; XXXV - Encontro Nacional de Astronomia e Astrofísica, Lisboa, Portugal
13. **I. M. Rolo**, **P. P. Avelino**, **M. S. Cunha**, **A. R. G. Santos**; 2025; *Exploring the magnetic fields of Ap stars with TESS*; XXXV - Encontro Nacional de Astronomia e Astrofísica, Lisboa, Portugal
14. **I. Santos de Sousa**, C. Verseux, P. Tamagnini, C. Magalhães, **M. Cortesão**; 2025; *Sustainable Space Habitats: Cyanobacterial Biomass as Feedstock for Fungal Biotechnology*; IJUP 2025, Porto, Portugal
15. **I. Santos de Sousa**, J. Azevedo, C. Verseux, P. Tamagnini, C. Magalhães, **M. Cortesão**; 2025; *Sustainable Space Habitats: Cyanobacterial Biomass as Feedstock for Fungal Biotechnology*; EANA 2025, Lisboa, Portugal
16. **J. Amaral**, **A. R. G. Santos**, **M. S. Cunha**, R. A. Garcia; 2025; *Shedding light on the complexities of stellar rotation*; IJUP 2025, Porto, Portugal
17. **J. Amaral**, **A. R. G. Santos**, **M. S. Cunha**, R. A. Garcia; 2025; *Shedding light on the complexities of stellar rotation*; XXXV - Encontro Nacional de Astronomia e Astrofísica, Lisboa, Portugal
18. **J. Fonseca**, **M. G. Santos**, Meerklass Collaboration; 2025; *HI Intensity mapping with the MeerKAT*; XXXV - Encontro Nacional de Astronomia e Astrofísica, Lisboa, Portugal
19. **J. Fonte**, P. Carvalho, **J. F. Gameiro**; 2025; *Análise da participação e divulgação de um projeto STEM*; XXI ENEC, Santarém, Portugal
20. **K. Al Moulla**, X. Dumusque, **N. C. Santos**; 2025; *Leveraging the Sun to enable the detection of Earth Twins*; XXXV - Encontro Nacional de Astronomia e Astrofísica, Lisboa, Portugal

21. **M. Cortesão**, **A. Mota**, I. Figueiredo, **A. Schiele**, **I. Santos de Sousa**, H. Palomeque ; 2025; *Advances on Fungal Research for Sustainable Space Habitats: From Fungal Biomining to Bag-Bioreactor Cultures*; EANA 2025, Lisboa, Portugal
22. **M. S. Cunha**; 2025; *Understanding Stars*; XXXV - Encontro Nacional de Astronomia e Astrofísica, Lisboa, Portugal
23. **N. C. Santos**; 2025; *Astrophysical challenges for the detection of other Earths*; EANA 2025, Instituto Superior Técnico, Avenida Rovisco Pais 14, 1000-287 Lisboa, Portugal, Portugal
24. **N. C. Santos**; 2025; *PoET: olhar para o Sol para encontrar outras Terras*; Encontro Nacional de Estudantes de Física 25, Rua do Campo Alegre, 4169-007 Porto, Portugal
25. **N. C. Santos**; 2025; *Synergies between theory and observations*; Detection and Dynamics of Exoplanets (DDE), Department of Physics, University of Coimbra, R. Larga, 3004-516 Coimbra, Portugal
26. **N. C. Santos**; 2025; *The Paranal solar ESPRESSO Telescope: a new step forward to understand stellar noise*; The Sixth Workshop on Extremely Precise Radial Velocities, Faculty of Sciences of the University of Porto, Portugal
27. **N. C. Santos**; 2025; *The quest for other Earths*; XXXV - Encontro Nacional de Astronomia e Astrofísica, Lisboa, Portugal
28. **P. Papaderos**, G. Östlin; 2025; *On the challenge of interpreting the morphology and color maps of high-z starburst galaxies with the JWST and Euclid*; XXXV - Encontro Nacional de Astronomia e Astrofísica, Lisboa, Portugal
29. **R. Costa**, **T. L. Campante**, **M. J. P. F. G. Monteiro**, M. Deal; 2025; *On the discrepancy between modelled and interferometric radii of K-type stars using asteroseismology*; XXXV - Encontro Nacional de Astronomia e Astrofísica, Lisboa, Portugal
30. **R. Heilemann**, **M. C. Rosa**, **J. R. C. C. C. Correia**, **C. J. A. P. Martins**; 2025; *Domain wall evolution beyond quartic potentials: The Sine-Gordon and Christ-Lee potentials*; MAP-Fis Research Conference, Porto, Portugal
31. **S. G. Sousa**; 2025; *SWEET-Cat 2024: A view on the planetary mass-radius relation (featuring ODUSSEAS)*; 5th Planetary Systems day, IA, Portugal
32. **T. L. Campante**; 2025; *Ciências planetárias e exoplanetas (panel discussion)*; Jornadas Espaciais, Lisboa, Portugal
33. **T. L. Campante**; 2025; *DFA Week*; DFA Week, FCUP, Portugal
34. **T. Monteiro**, J. Gomes da Silva, E. Delgado Mena, **N. C. Santos**; 2025; *Analysis of NIR activity indices for exoplanet detection and characterization*; Encontro de Investigação Jovem da Universidade do Porto - IJUP 2025, Porto, Portugal
35. **T. Monteiro**, J. Gomes da Silva, E. Delgado Mena, **N. C. Santos**; 2025; *Analysis of NIR activity indices for exoplanet detection and characterization*; XXXV - Encontro Nacional de Astronomia e Astrofísica, Lisboa, Portugal
36. **Y. C. Damasceno**; 2025; *Atmospheric composition of the ultra-hot Jupiter WASP-178 b with ESPRESSO*; Planetary Systems day 5, Porto, Portugal
37. **Y. C. Damasceno**; 2025; *Composição e dinâmica atmosféricas do Júpiter ultra-quente WASP-178 b*; Astrobiologia: entre Estrelas e Microorganismos, Porto, Portugal
38. **Y. C. Damasceno**; 2025; *The atmospheric composition and dynamics of WASP-178 b*; XXXV - Encontro Nacional de Astronomia e Astrofísica, Lisboa, Portugal

Scientific Seminars in 2025

1. B. Akinsanmi; 2025; *Unlocking the hearts of giants with Love*
2. K. Al Moulla; 2025; *Roadblocks to Detect Earth-like Exoplanets: Mitigating Solar-type Activity in Radial Velocities with a Universal Activity Indicator*
3. L.V. Barkhudaryan; 2025; *Supernovae Ia ejecta velocities and host galaxy characteristics*
4. M. Cortesão; 2025; *Astrobiology and Space Microbiology*
5. C. García Miró; 2025; *Radio Astronomy Activities in Spain and Strategic Collaborations with Portugal*
6. D. Gonçalves; 2025; *The detection of biosignatures on Titan*
7. R. Holman; 2025; *Entanglement masquerading in the CMB*
8. H. Krawczynski; 2025; *Observations of Stellar Mass Black Holes with the IXPE and XL-Calibur X-ray Polarimetry Missions*
9. R. Marques-Chaves; 2025; *Extremely UV-bright starbursts in the distant Universe*
10. C. J. A. P. Martins; 2025; *The Eddington Curvature of Light Iberian Peninsula Scientific Experiment*
11. W. Matthewson; 2025; *A Brief Colloquium on DESI and Euclid*
12. A. L. Morozova; 2025; *Scintillations in Southern Europe During the Geomagnetic Storm of June 2015*
13. P. Russo; 2025; *Perspectives on Astronomy&Society*
14. C. Trujillo; 2025; *Active Asteroids, Extremely Distant Trans-Neptunians and Planet X*

External seminars by CAUP researchers in 2025

1. **N. C. Santos;** *À procura de outras terras;* Sociedade Portuguesa de Geologia; Ciclo de Webinars "Era uma vez no Espaço"; 10 de Setembro de 2025
2. **C. J. A. P. Martins**; *Fundamental cosmology from high-resolution astrophysical spectroscopy*; 197th Copernicus Seminar; U.Warsaw(online), 25 May 2025
3. **C. J. A. P. Martins;** *To scale, or not to scale*; CURL senubar; U.C. Louvain (Belgium); 12 June 2025
4. **Â. R. G. Santos;** *Signatures of stellar magnetism and rotation: from low- to high-frequency phenomena;* CEA, France; 01/07/2025
5. **A. M. Silva;** *Avenues for radial velocity extraction – s-BART & PoET*; Astronomical Institute of the Czech Academy of Sciences; Czech Republic; Aug 2025
6. **A. M. Silva;** *Avenues for radial velocity extraction – s-BART & PoET*; Astronomy department, Uni. of Geneva; Switzerland; Jan 2025

7. **B. Soares;** *How to swallow a planet? Processes and consequences of planet engulfment,* Seminários Café com Física, Coimbra, Porto, 14 Maio 2025
8. **I. Santos de Sousa;** *Symposium for Early-Career Researchers in Astrobiology*, Lisbon, Portugal, 20 October 2025
9. **K. Al Moulla**; *Roadblocks to Detect Earth-like Exoplanets: Mitigating Solar-type Activity in Radial Velocities with a Universal Activity Indicator*; IA; Portugal; 2025
10. **D. F. M. Folha**; *Astronomia e Astrofísica no IA - breve apresentação*, I Congreso Gallego de Investigación en Astronomía y Astrofísica – GIAA 2025, Universidade de Vigo, Vigo, Spain, 17 July 2025.
11. **J. Fonseca**; *Cosmology with with the SKAO and precursors*, EPS Young Minds Aveiro (Aveiro, Portugal), June 2025

Outreach talks in 2025

1. **A. R. Costa Silva;** *Dez jovens que dão voz à ciência em Portugal*, Comunidade Cultura e Arte, 21 October 2025
2. **A. Branco;** A*s Ciências do Espaço e a Astrobiologia: Há Vida Noutros Planetas?;* Escola Básica e Secundária de Vialonga, Lisbon, Portugal, 17 de novembro 2025.
3. **A. Branco;** *Astrobiologia: Onde a Vida Impulsiona a Exploração Espacial;* Universidade de Aveiro, Aveiro, Portugal, 26 de novembro 2025.
4. **A. Branco;** *Science outreach stand on Astrobiology at the SpaceSUITE Dissemination Event*, NOVA-FCT, Lisbon, Portugal, Dec 10, 2025
5. **A. Branco;** Workshop on Astronaut Life Support Systems, Universidade de Aveiro, Aveiro, Portugal, Nov 4, 2025.
6. **A. Chougule**; *Galaxies: Cosmic Clues to the Universe's Secrets*, Porto planetarium, July 8th and 15th, 2025.
7. **A. M. Mota;** *As ciências do espaço e a Astrobiologia, há vida noutros planetas?*, Escola Básica e Secundária de Vialonga, 17/11/2025
8. **A. M. Mota;** *As ciências do espaço e a Astrobiologia, há vida noutros planetas?*, Escola Básica e Secundária de Vialonga, 17/11/2025
9. **A. M. Mota;** *Astrobiologia: Onde a Física Encontra a Vida*, Physis Week 2025, 30/09/2025
10. **A. M. Mota;** *Astrobiologia: Onde a Vida Impulsiona a Exploração Espacial*, NAVEE (Universidade de Aveiro), 26/11/2025
11. **A. M. Mota;** *Estamos Sozinhos? A Ciências de Estudar a Vida no Universo*, Semana Mundial do Espaço 2025 – Estreia da sessão Biosfera da Escuridão, Planetário do Porto, 04/10/2025
12. **A. M. Mota**;*As ciências do espaço e a Astrobiologia, há vida noutros planetas?,* Escola EB2/3 Eugénio de Andrade, 02/06/2025
13. **A. M. Silva**; *Descoberta de outra Terra - Deteção de planetas fora do sistema solar*; Espaço vai à escola; Escola secundária Gonçalves Zarco - dia 07 de outubro 2025
14. **A. M. Silva**; *Descoberta de outra Terra - Deteção de planetas fora do sistema solar; Espaço vai à escola*; Escola Secundária Filipa de Vilhena, Porto - dia 22 outubro 2025
15. **A. M. Silva**; *Descoberta de outra Terra - Deteção de planetas fora do sistema solar*; Espaço vai à escola; Escola Secundária António Nobre, Porto, dia 24 outubro 2025
16. **A. M. Silva**; *Descoberta de outra Terra - Deteção de planetas fora do sistema solar*; Espaço vai à escola; Colégio de Nossa Senhora da Paz, dia 24 de outubro 2025
17. **A. M. Silva**; *Descoberta de outra Terra - Deteção de planetas fora do sistema solar*; Espaço vai à escola; Escola Básica de Aver-o-Mar, Póvoa de Varzim, dia 14 novembro 2025
18. **A. M. Silva**; *Descoberta de outra Terra - Deteção de planetas fora do sistema solar*; Espaço vai à escola; Escola Básica e Secundária de Coronado e Castro, São Romão do Coronado, Trofa, dia 18 novembro 2025
19. **A. M. Silva**; *Descoberta de outra Terra - Deteção de planetas fora do sistema solar*; Espaço vai à escola (online); Escola Básica e Secundária Dr. João Brito Camacho, Almodôvar, dia 8 de outubro 2025
20. **A. M. Silva**; *Descoberta de outra Terra - Deteção de planetas fora do sistema solar*; Espaço vai à escola (online); Colégio da Imaculada Conceição - dia 9 de outubro 2025
21. **A. M. Silva**; *Descoberta de outra Terra - Deteção de planetas fora do sistema solar*; Espaço vai à escola (online); Escola Básica de São Bruno, Caxias, Oeiras dia 10 outubro 2025
22. **A. M. Silva**; *Descoberta de outra Terra - Deteção de planetas fora do sistema solar*; Espaço vai à escola (online); grupamento de escolas da Gafanha da Encarnação- dia 15 de outubro 2025
23. **A. M. Silva**; Descoberta de outra Terra - Deteção de planetas fora do sistema solar; Espaço vai à escola (online); Escola Básica D. Jorge de Lencastre, Grândola - dia 21 outubro 2025
24. **A. M. Silva**; *Descoberta de outra Terra - Deteção de planetas fora do sistema solar*; Espaço vai à escola (online); Escola Secundária do Arco-Íris, Portela, Loures- Dia 23 outubro 2025
25. **A. M. Silva**; *Descoberta de outra Terra - Deteção de planetas fora do sistema solar*; Espaço vai à escola (online); Escola Secundária Pública Hortênsia de Castro, Vila Viçosa - Dia 27 outubro 2025
26. **A. M. Silva**; *Descoberta de outra Terra - Deteção de planetas fora do sistema solar*; Espaço vai à escola (online); Escola Básica do Bom Sucesso, Alverca do Ribatejo, Vila Franca de Xira - Dia 28 outubro 2025
27. **A. M. Silva**; *Descoberta de outra Terra - Deteção de planetas fora do sistema solar*; Espaço vai à escola (online); Escola Básica Professor Doutor Carlos Mota Pinto, Lajeosa do Dão, Tondela - dia 27 outubro 2025
28. **A. M. Silva**; *Descoberta de outra Terra - Deteção de planetas fora do sistema solar*; Espaço vai à escola (online); Escola Básica Jacinto Correia, Lagoa - Dia 30 de Outubro 2025
29. **A. M. Silva**; *Descoberta de outra Terra - Deteção de planetas fora do sistema solar*; Espaço vai à escola (online); Escola Secundária de Caldas das Taipas, Guimarães - Dia 3 de Novembro 2025
30. **A. M. Silva**; *Descoberta de outra Terra - Deteção de planetas fora do sistema solar*; Espaço vai à escola (online); Escola Secundária Rainha Dona Leonor, Lisboa - Dia 6 de Novembro 2025
31. **A. M. Silva**; *Descoberta de outra Terra - Deteção de planetas fora do sistema solar*; Espaço vai à escola (online); Escola Básica de Corroios, Seixal Dia 6 de novembro 2025

32. **A. M. Silva**; *Descoberta de outra Terra - Deteção de planetas fora do sistema solar*; Espaço vai à escola (online); Escola Básica e Secundária de Vale de Ovil, Baião - Dia 7 de Novembro 2025
33. **A. M. Silva**; *Descoberta de outra Terra - Deteção de planetas fora do sistema solar*; Espaço vai à escola (online); Escola Básica de Aljezur Dia 10 novembro 2025
34. **A. M. Silva**; *Descoberta de outra Terra - Deteção de planetas fora do sistema solar*; Espaço vai à escola (online); Escola Básica Navegador Rodrigues Soromenho, Sesimbra - Dia 13 novembro 2025
35. **A. R. Costa Silva**; *À procura de outras Terras*, online for Luanda Science Centre, Angola, 9 October 2025
36. **B. Soares**; Conhecer as estrelas do nosso céu!, Baltar, 22 October 2025
37. **B. Soares**; Conhecer as estrelas do nosso céu!, Marco de Canaveses, 5 November 2025
38. **B. Soares**; Conhecer as estrelas do nosso céu!, Porto, 7 November 2025
39. **B. Soares**; Conhecer as estrelas do nosso céu!, Póvoa de Varzim, 30 October 2025
40. **B. Soares**; Conhecer as estrelas do nosso céu!, Rio Tinto, 27 October 2025
41. **B. Soares**; Conhecer as estrelas do nosso céu!, Santo Tirso, 5 November 2025
42. **B. Soares**; Conhecer as estrelas do nosso céu!, Sintra , 6 November 2025 (online)
43. **B. Soares**; Conhecer as estrelas do nosso céu!, Trofa, 6 October 2025
44. **B. Soares**; Conhecer as estrelas do nosso céu!, Vila do Conde, 29 October 2025
45. **B. Soares**; Conhecer as estrelas do nosso céu!, Vila Nova de Gaia, 28 October 2025
46. **B. Soares**;Conhecer as estrelas do nosso céu!, Gondomar, 13 November 2025
47. **B. Soares**;Conhecer as estrelas do nosso céu!, Porto, 12 November 2025
48. **B. Soares**;Conhecer as estrelas do nosso céu!, Porto, 14 November 2025
49. **B. Soares**;Conhecer as estrelas do nosso céu!, S. João da Madeira, 31 October 2025
50. **B. Soares**;Conhecer as estrelas do nosso céu!, Vila Nova de Gaia, 10 November 2025
51. **C. J.A.P. Martins**; *A física da atmosfera e do aquecimento global*, ES da Bemposta, Portimão, 6 October 2025
52. **C. J.A.P. Martins**; *A física da atmosfera e do aquecimento global*, ES do Vale de Ovil, Baião, 14 November 2025
53. **C. J.A.P. Martins;** *A física da atmosfera e do aquecimento global;* ES de Lousada, 8 October 2025
54. **C. J.A.P. Martins**; *A física da atmosfera e do aquecimento global;* ES Quinta das Palmeiras, Covilhã, 14 October 2025
55. **C. J.A.P. Martins**; *A física da atmosfera e do aquecimento global;* ES Ribeiro Sanches, Penamacor, 15 October 2025
56. **C. J.A.P. Martins**; *A física da atmosfera e do aquecimento global*; ES Emídio Navarro, Almada, 5 November 2025
57. **C. J.A.P. Martins;** *A física da atmosfera e do aquecimento global;* ES de Molelos, Tondela, 18 November 2025
58. **C. J.A.P. Martins**; *A física da atmosfera e do aquecimento global;* ES Joaquim de Carvalho, Figueira da Foz, 19 November 2025
59. **C. J.A.P. Martins**; *A física da atmosfera e do aquecimento global;* ES Rocha Peixoto, Póvoa de Varzim, 20 November 2025
60. **C. J.A.P. Martins**; *A física da gravidade e dos satélites:* ES José Gomes Ferreira, Lisboa, 5 November 2025
61. **C. J.A.P. Martins**; *A física da gravidade e dos satélites;* ES de Rio Tinto, 2 October 2025
62. **C. J.A.P. Martins**; *A física da gravidade e dos satélites;* ES Inês de Castro, Vila Nova de Gaia, 22 October 2025
63. **C. J.A.P. Martins**; *A física da gravidade e dos satélites;* ES Maria Amália Vaz de Carvalho, Lisboa, 6 November 2025
64. **C. J.A.P. Martins**; *A física da gravidade e dos satélites;* ES Pedro Alexandrino, Póvoa de Sto. Adrião, 4 November 2025
65. **C. J.A.P. Martins**; *A física da radioactividade e do cancro*, ES de Vouzela, 18 November 2025
66. **C. J.A.P. Martins**; *A física da radioactividade e do cancro*, ES Emídio Navarro, Viseu, 17 November 2025
67. **C. J.A.P. Martins**; *A física da radioactividade e do cancro*, ES Viriato, Viseu, 17 November 2025
68. **C. J.A.P. Martins**; *A física da radioactividade e do cancro*; Colégio Vasco da Gama, Sintra, 6 November 2025
69. **C. J.A.P. Martins**; *A física da radioactividade e do cancro;* ES Camilo Castelo Branco, Famalicão, 27 novembro 2025
70. **C. J.A.P. Martins**; *A física da radioactividade e do cancro;* ES de Lordelo, Paredes, 28 November 2025
71. **C. J.A.P. Martins**; *A física da radioactividade e do cancro;* ES José Agostinho Rodrigues, Alter do Chão, 7 October 2025
72. **C. J.A.P. Martins**; *A física da radioactividade e do cancro*; ES Martinho Vaz de Castelo Branco, Póvoa de Sta. Iria, 7 November 2025
73. **C. J.A.P. Martins**; *A física da vida e dos extraterrestres*, ES Clara de Resende, Porto, 11 November 2025
74. **C. J.A.P. Martins**; *A física da vida e dos extraterrestres;* ES Al Berto, Sines, 9 October 2025
75. **C. J.A.P. Martins**; *A física do Big Bang;* ES Flávio Pinto Resende, Cinfães, 21 November 2025
76. **C. J.A.P. Martins**; *A física dos eclipses e da experiência de Eddington;* Escola Portuguesa de Dili,Timor-Leste, 1 October 2025
77. **C. J.A.P. Martins**; *A física dos eclipses e da experiência de Eddington;* ES de Arga e Lima, Lanheses, 10 October 2025
78. **C. J.A.P. Martins**; *A física dos eclipses e da experiência de Eddington*; Colégio Marista de Carcavelos, 3 November 2025
79. **C. J.A.P. Martins**; *A física dos eclipses e da experiência de Eddington;* ES Gago Coutinho, Alverca, 7 November 2025
80. **C. J.A.P. Martins**; *A física dos eclipses e da experiência de Eddington;* ES À Beira Douro, Gondomar, 27 November 2025
81. **C. J.A.P. Martins**; *Como se pesa a luz: A Experiência de Eddington na Península Ibérica*, Rómulo, Dept.Física da U. Coimbra, 15 April 2025
82. **C. J.A.P. Martins**; *The Eddington Curvature of Light Iberian Peninsula Scientific Experiment*, AstroCamp 2025, 22 August 2025
83. **C. M. J. Marques;** *Do Big Bang ao Presente: Como desvendar os segredos do nosso Universo?*; Escola Básica D. Martinho de Castelo Branco; Portimão; Portugal; 08 outubro
84. **C. M. J. Marques;** *Do Big Bang ao Presente: Como desvendar os segredos do nosso Universo?*; Agrupamento de Escolas da Gafanha da Encarnação; Ílhavo; Portugal; 13 outubro
85. **C. M. J. Marques;** *Do Big Bang ao Presente: Como desvendar os segredos do nosso Universo?*; Escola Básica e Secundária de Vialonga; Vila Franca de Xira; Portugal; 15 outubro
86. **C. M. J. Marques;** *Do Big Bang ao Presente: Como desvendar os segredos do nosso Universo?*; Escola Básica de São Bruno Caxias; Oeiras; Portugal; 16 outubro 2025

87. **C. M. J. Marques;** *Do Big Bang ao Presente: Como desvendar os segredos do nosso Universo?*; Casa Pia de Lisboa; Lisboa; Portugal; 20 outubro 2025
88. **C. M. J. Marques;** *Do Big Bang ao Presente: Como desvendar os segredos do nosso Universo?*; Escola Secundária de Molelos; Tondela; Portugal; 22 outubro 2025
89. **C. M. J. Marques;** *Do Big Bang ao Presente: Como desvendar os segredos do nosso Universo?*; Escola Secundária Rainha Dona Leonor; Lisboa; Portugal; 23 outubro 2025ou
90. **C. M. J. Marques;** *Do Big Bang ao Presente: Como desvendar os segredos do nosso Universo?*; Externato Liceal de Albergaria dos Doze; Pombal; Portugal; 28 outubro 2025
91. **C. M. J. Marques;** *Do Big Bang ao Presente: Como desvendar os segredos do nosso Universo?*; Escola Básica de São Bruno Caxias; Oeiras; Portugal; 29 outubro 2025
92. **C. M. J. Marques;** *Do Big Bang ao Presente: Como desvendar os segredos do nosso Universo?*; Escola Básica de Aljezur; Aljezur; Portugal; 30 outubro 2025
93. **C. M. J. Marques;** *Do Big Bang ao Presente: Como desvendar os segredos do nosso Universo?*; Escola Portuguesa de Luanda; Angola; 31 outubro 2025
94. **C. M. J. Marques;** *Do Big Bang ao Presente: Como desvendar os segredos do nosso Universo?*; Escola Secundária de Felgueiras; Felgueiras; Portugal; 03 novembro 2025
95. **C. M. J. Marques;** *Do Big Bang ao Presente: Como desvendar os segredos do nosso Universo?*; Escola Básica Vasco da Gama; Lisboa; Portugal; 03 novembro 2025
96. **C. M. J. Marques;** *Do Big Bang ao Presente: Como desvendar os segredos do nosso Universo?*; Escola Básica e Secundária Pedro Álvares Cabral; Belmonte; Portugal; 04 novembro 2025
97. **C. M. J. Marques;** *Do Big Bang ao Presente: Como desvendar os segredos do nosso Universo?*; Colégio do Castanheiro São Miguel; Açores; Portugal; 07 novembro 2025
98. **C. M. J. Marques;** *Do Big Bang ao Presente: Como desvendar os segredos do nosso Universo?*; Escola Básica e Secundária de Coronado e Castro; Trofa; Portugal; 10 novembro 2025
99. **C. M. J. Marques;** *Do Big Bang ao Presente: Como desvendar os segredos do nosso Universo?*; Escola Dr. António da Costa Contreiras; Armação de Pêra; Portugal; 10 novembro 2025
100. **C. M. J. Marques;** *Do Big Bang ao Presente: Como desvendar os segredos do nosso Universo?*; Escola Básica Pedro de Santarém; Lisboa; Portugal; 12 novembro 2025
101. **C. M. J. Marques;** *Do Big Bang ao Presente: Como desvendar os segredos do nosso Universo?*; Escola Secundária de Felgueiras; Felgueiras; Portugal; 19 novembro 2025
102. **Catarina Lobo**; *Galáxias no CAUP*; 2º Encontro Regional de Clubes Ciência Viva do Planetário do Porto – CCV; FCUP, 22 de fevereiro 2025
103. **E. A. S. Cristo;** Projeto SEI (Sociedade, Escolas e Investigação), Conservatório de Música do Porto, January-April 2025
104. **I. A. Costa**, *Ciência cidadã para o ensino da astronomia*; Maputo; Moçambique; 30 de junho 2025
105. **J. Fonseca**; *De onde viemos? O que somos? Para onde vamos?, Uma viagem sobre a percepção do Cosmos*, Escola Secundária de Mirandela (Mirandela, Portugal), 2025/11/14,
106. **J. Fonseca;** *De onde viemos? O que somos? Para onde vamos?, Uma viagem sobre apercepção do Cosmos*, Escola Secundária de São Pedro do Sul (São Pedro do Sul,Portugal), 2025/10/24
107. **J. H. C. Martins;** *Hora do cientista*, Outreach presentation to 4th year children,31 janeiro 2025
108. **L. G. Sousa**; *Ouvir o Universo: 10 anos de ondas gravitacionais*, Planetário do Porto, 14/09/2025
109. **L. G. Sousa**; *Revelando a dinâmica do universo*, 2º Encontro Regional dos Clubes Ciência Viva do Planetário do Porto - CCV 2025: A Astronomia como Ciência Portal para o Ensino,2025-02-22
110. **M. Cortesão;** Escola Básica "Comendador Ângelo Azevedo", Oliveira de Azeméis , 5 novembro de 2025
111. **M. Cortesão;** Escola Básica do Castro, Alvarelhos, Trofa,12 novembro 2025
112. **M. Cortesão;** Escola Básica e Secundária Dr. Ferreira da Silva, Cucujães, Oliveira de Azeméis, 10 novembro 2025
113. **M. Cortesão;** Escola Secundária de Rocha Peixoto, Póvoa do Varzim,3 novembro de 2025
114. **M. Cortesão**; Escola Secundária João Gonçalves Zarco, Matosinhos,13 novembro 2025
115. **M. S. Cunha**; Interview: International day of the woman in science, Escola Secundária Camilo Castelo Branco, Famalicão,11 de fevereiro 2025
116. **N. C. Santos**; *Mostra da Universidade do Porto*; Stand DFA, Pavilhão Multiusos de Gondomar; 6 de março de 2025
117. **N. C. Santos**; *Outras terras no Universo?*; Ciclo de webinars dos 25 anos da Sociedade Portuguesa de Astronomia, Webinar, 11 novembro 2025
118. **P. M. de Carvalho**; *Da Idade da Magia a Galileu*; Escola Básica de Toutosa; Marco de Canaveses, 9 outubro 2025
119. **P. M. de Carvalho**; *Da Idade da Magia a Galileu*; Escola Básica do Castro; Alvarelhos, Trofa; 7 novembro 2025
120. **P. M. de Carvalho**; *Da Idade da Magia a Galileu*; Escola Básica e Secundária Mestre Domingos Saraiva; Algueirão, Sintra; 28 outubro 2025
121. **P. M. de Carvalho;** *Da Idade da Magia a Galileu*; Escola Básica e Secundária Mestre Domingos Saraiva; Algueirão, Sintra; 28 outubro 2025
122. **P. M. de Carvalho**; *Da Idade da Magia a Galileu*; Escola Básica e Secundária Mestre Domingos Saraiva; Algueirão, Sintra; 28 outubro 2025
123. **P. M. de Carvalho**; *Da Idade da Magia a Galileu*; Escola Secundária de Rocha Peixoto; Póvoa de Varzim; 10 outubro 2025
124. **P. M. de Carvalho**; *Da Idade da Magia a Galileu*; Escola Secundária de São Pedro do Sul; S. Pedro do Sul; 17 outubro 2025
125. **P. M. de Carvalho;** *O Universo - Escalas e Conteúdo*; Escola Básica Agustina Bessa Luís; Bagunte, Vila do Conde; 10 outubro 2025
126. **P. M. de Carvalho**; *O Universo - Escalas e Conteúdo*; Escola Básica de Ribeira; Viseu; 14 novembro 2025

127. **P. M. de Carvalho**; *O Universo - Escalas e Conteúdo*; Escola Básica de Ribeira; Viseu; 5 dezembro 2025
128. **P. M. de Carvalho**; *O Universo em Potências de 10*; Escola Básica Dr. Acácio de Azevedo; Oliveira do Bairro; 31 outubro 2025
129. **P. M. de Carvalho**; *O Universo em Potências de 10*; Escola Básica de Santa Cruz da Trapa; São Pedro do Sul; 14 novembro 2025
130. **P. M. de Carvalho**; *O Universo em Potências de 10*; Escola Básica de Santa Cruz da Trapa; São Pedro do Sul; 14 novembro 2025
131. **P. M. de Carvalho**; *O Universo em Potências de 10*; Escola Básica de Santa Cruz da Trapa; São Pedro do Sul; 14 novembro 2025
132. **P. M. de Carvalho;** *O Universo em Potências de 10*; Escola Básica e Secundária de Vila Pouca de Aguiar - Sul; Vila Pouca de Aguiar; 28 novembro 2025
133. **P. M. de Carvalho**; *O Universo em Potências de 10*; Escola Básica e Secundária de Vila Pouca de Aguiar; Vila Pouca de Aguiar; 28 novembro 2025
134. **P. M. de Carvalho**; *O Universo em Potências de 10; Escola Básica n.º 2 de São Silvestre*; Coimbra, 7 outubro 2025
135. **P. M. de Carvalho**; *O Universo em Potências de 10*; Escola Básica Poeta Manuel da Silva Gaio; Santa Clara, Coimbra 7 outubro 2025
136. **P. M. de Carvalho**; *O Universo em Potências de 10*; Escola Básica Sophia de Mello Breyner; Corvo, Arcozelo, Vila Nova de Gaia; 12 novembro 2025
137. **P. M. de Carvalho**; *O Universo em Potências de 10*; Escola Secundária de Figueira de Castelo Rodrigo; Figueira de Castelo Rodrigo; 17 outubro 2025
138. **P. M. de Carvalho**; *O Universo em Potências de 10*; Escola Secundária do Arco-Íris; Portela, Loures; 29 outubro 2025
139. **P. M. de Carvalho**; *Um Universo de Informação - A Luz*; Escola Básica D. Carlos I; Sintra; 28 outubro 2025
140. **P. M. de Carvalho**; *Um Universo de Informação - A Luz*; Escola Básica e Secundária D. Martinho Vaz de Castelo Branco; Vila Franca de Xira; 29 outubro 2025
141. **P. M. de Carvalho**; *Um Universo de Informação - A Luz*; Escola Básica e Secundária D. Martinho Vaz de Castelo Branco; Vila Franca de Xira; 29 outubro 2025
142. **P. M. de Carvalho**; *Um Universo de Informação - A Luz*; Escola Básica da Gafa; 31 outubro 2025
143. **P. M. de Carvalho**; *Um Universo de Informação - A Luz*; Escola Básica da Gafanha da Encarnação; Ílhavo; 31 outubro 2025
144. **P. M. de Carvalho**; *Um Universo de Informação - A Luz*; Escola Básica Dr. Acácio de Azevedo; Oliveira do Bairro; 31 outubro 2025
145. **P. M. de Carvalho;** Um Universo de Informação - A Luz; Escola Básica de Souselo; Cinfães; 3 novembro 2025
146. **P. M. de Carvalho**; *Um Universo de Informação - A Luz*; Escola Básica do Castro; Alvarelhos, Trofa; 7 novembro 2025
147. **P. M. de Carvalho**; *Um Universo de Informação - A Luz*; Escola Básica e Secundária de Coronado e Castro; S. Romão do Coronado, Trofa; 10 novembro 2025
148. **P. M. de Carvalho**; *Um Universo de Informação - A Luz*; Escola Básica e Secundária Dr. Serafim Leite; S. João da Madeira; 21 novembro.2025
149. **P. M. de Carvalho**; Um Universo de Informação - A Luz; Escola Básica e Secundária Dr. Serafim Leite; S. João da Madeira; 21 novembro 2025
150. **P. M. de Carvalho;** *Um Universo de Informação - A Luz*; Escola Secundária de Lousada; Lousada; 6 outubro 2025
151. **P. M. de Carvalho;** *Uma Viagem pelo Universo*; Escola Básica Agustina Bessa Luís; Bagunte, Vila do Conde; 13 outubro 2025
152. **P. M. de Carvalho**; *Uma Viagem pelo Universo*; Escola Básica Agustina Bessa Luís; Bagunte, Vila do Conde; 21 outubro 2025
153. **P. M. de Carvalho**; *Uma Viagem pelo Universo*; Escola Básica de Ribeira; Viseu; 14 novembro 2025
154. **P. M. de Carvalho**; *Uma Viagem pelo Universo*; Escola Básica de Ribeira; Viseu; 5 dezembro 2025
155. **P. M. de Carvalho**; *Uma Viagem pelo Universo*; Escola Básica Poeta Manuel da Silva Gaio; Santa Clara, Coimbra; 5 novembro 2025
156. **P. M. de Carvalho;** *Uma Viagem pelo Universo*; Escola Jasmim; Vila Nova de Gaia; 14 outubro 2025
157. **P. M. de Carvalho**; *Uma Viagem pelo Universo*; Faculdade de Ciências da Universidade do Porto; Porto; 5 abril 2025
158. **S. A. G. Sousa**; *Do Nosso Céu a Outras Terras: A Busca por outros Planetas na nossa galáxia*; Palestra Espaço vai à Escola; Escola Básica e Secundária de Canelas, Vila Nova de Gaia; 21 de outubro 2025
159. **S. A. G. Sousa**; *Do Nosso Céu a Outras Terras: A Busca por outros Planetas na nossa galáxia*; Palestra Espaço vai à Escola ; Escola Básica e Secundária do Coronado (S. Romão do Coronado - Trofa); 11 de novembro 2025
160. **S. A. G. Sousa**; *Uma Noite no Observatório: A Vida de um Caçador de Exoplanetas*; Palestra Espaço vai à Escola Colégio "Casa Mãe"; Baltar 23 outubro 2025
161. **S. A. G. Sousa**; *Uma Noite no Observatório: A Vida de um Caçador de Exoplanetas*; Palestra Espaço vai à Escola ; Escola Secundária António Nobre; Porto; 12 novembro 2025
162. **Y. C. Damasceno;** *Astronomia: dos conceitos à prática* - Estrelas, Porto, 07/07/2025

Other indicators

Visitors in 2025

The researchers/lecturers that have visited CAUP in 2025 were:

1. Cristina García Miró, Yebes Observatory, National Astronomical Observatory (OAN,IGN), Afghanistan, 11 - 14 December 2025
2. William, L. M. Matthewson, Korea Astronomy and Space Science Institute, Republic of Korea, 2 - 3 December 2025
3. Lilit V. Barkhudaryan, A.Alikhanian Yerevan Institute of Physics, Armenia, 11 - 25 November 2025
4. Luis Roque, Faculty of Enginnerign, University of Porto/ Laboratory for Artificial Intelligence and computer Science, Portugal, 24 October 2025
5. Kristina Vlckova, Observatório Regional Zilina, Slovakia, 7 - 11 October 2025
6. Jan Masiar, Observatório Regional Zilina, Slovakia, 7 - 11 October 2025
7. Denisa Cviklova, Observatório Regional Zilina, Slovakia, 7 - 11 October 2025
8. David Seben, Observatório Regional Zilina, Slovakia, 7 - 11 October 2025
9. Jochen Liske, Universidade de Hamburgo, Germany, 25 - 30 September 2025
10. Sami K. Solanki, Max Planck Institute for Solar System Research, Germany, 8 September 2025
11. Walmir Cardoso, Universidade Federal do Rio de Janeiro, Brazil, 1 - 3 September 2025
12. Federica Mauro, University of Vienna, Austria, 1 - 22 September 2025
13. Anna Martinez Pedreño, Jic Program, Spain, 14 - 25 July 2025
14. Carles Mauri, Jic Program, Spain, 14 - 25 July 2025
15. Yaguang Li, University of Hawaii at Manoa, United States, 4 July 2025
16. Henric Krawczynski, Washington University in St.Louis, United States, 27 June 2025
17. Daniel L. Holdsworth, University of Lacanshire, United Kingdom, 25 - 27 June 2025
18. Rui Chaves, University of Geneva, Switzerland, 27 - 30 May 2025
19. Babatunde Akinsanmi, Observatoire de Geneve, University of Geneva, Switzerland, 26 - 30 May 2025
20. Diogo V. Gonçalves, Instituto Superior Técnico - Universidade de Lisboa, Portugal, 16 May 2025
21. Chad Trujillo, Departament of Astronomy And Planetary Science, United States, 30 April 2025
22. Pedro Russo, Leiden University (NL) / Ciência Viva (PT), Netherlands, 21 - 22 February 2025
23. Bas Zoutendijk, Leiden Observatory, Netherlands, 17 - 21 February 2025

Observing runs during 2025

1. Holdsworth, **Margarida S. Cunha** et al.; *Defining a new chemically peculiar star catalogue*; HRS@SALT; January-December 2025
2. Antoci, **Margarida S. Cunha** et Al.; *The role of magnetism in pulsation driving: roAp stars and their Am/Fm Counterparts*; TESS/NASA GI programme; cycle 8; September 2025-September 2026
3. Antoci, **Margarida S. Cunha** et Al.;*Exploring the excitation mechanisms of roap stars: κ-mechanism vs turbulent pressure*; TESS/NASA GI programme; cycle 8; September 2025-September 2026
4. Holdsworth, **Margarida S. Cunha** et al.; Seeking the Elusive Northern roAp Stars: A Focus on Ap Stars Identified through LAMOST Spectra, TESS/NASA GI programme; cycle 7; September 2024-September 2025
5. **Sousa**, Mortier, **Santos**,Rojas Ayala, **Adibekyan**, Israelian, **Demangeon**, **Barros**, Delgado Mena, Tsantaki, **Soares**; *Know the star to know the planet: Improving Sweet-Cat with homogeneous planet-host parameters;* Uves, Vlt Ut2; SM 115.27VJ.001 // 0115.C-2293(A)
6. Rainer, M., **Campante, T. L.**, Tsantaki, M., Delgado Mena, E., et al.; *Indepth characterisation of the faintest Ariel exoplanet host stars*; Program ID: IT-2025B-018; Potsdam Echelle Polarimetric and Spectroscopic Instrument (PEPSI) at the Large Binocular Telescope (LBT); Semester 2025B
7. Chowhan, A., **Campante, T. L.**, Lundkvist, M. S., Vrard, M., et al.; Shedding light on radius inflation in K dwarfs using interferometry of K-dwarf 2025AR - Tiago J. L. C. E. Campante 5/7 asteroseismology targets; Program ID: N/A; MIRC-X, MYSTIC, and SPICA at the CHARA Array; Semester 2025B
8. **Alexandre Branco**, Afonso Mota, **Olivier Demangeon**, **Bárbara Soares**, Vincent Bourrier,**Clara Sousa-Silva**, **Pedro Machado**, **Rafael Silva**; *Hot Rocks and Steam: Investigating the Atmospheres of a Hot Super-Earth and a Candidate Steam World with ESPRESSO*, Proposal 117.2A7H; ESPRESSO; P117
9. Ana Rita Costa Silva, **Olivier Demangeon**, Romain Allart, **N.C. Santos**, David Ehrenreich, Christophe Lovis, Francesco Pepe, Enric Palle, **Eduardo Cristo,** María Rosa Zapatero Osorio, Tomás Azevedo Silva, **Pedro Machado**, Eva Herrero-Cisneros, Michal Steiner, Hugo Tabernero, **Vardan Adibekyan,** Jorge **Lillo** Box, **Bárbara Soares**, **Alexandre Branco**, **Carmen San Nicolas Martinez**, **Yuri Damasceno**; *No chill: a survey of ultra-hot Jupiter atmospheres*, Proposal 116.2916; ESPRESSO; P116
10. **Bárbara Soares;** NIRPS-GTO, NIRPS GTO program, NIRPS+HARPS @3.6m telescope La Silla Observatory, 24 February - 2 March 2025
11. **Catarina M. J. Marques;** Breaking the 1 m/s/yr barrier in the measurement of the cosmic redshift drift; 116.28U4; ESPRESSO - VLT; P116

12. **Catarina M. J. Marques;** *ESPRESSO in the sky with diamonds: the small scale structure of the IGM with spectroscopy of lensed quasars*; 115.28E5; ESPRESSO - VLT; P115
13. **Catarina M. J. Marques;** *An ESPRESSORedshift Drift Experiment, Part IIb*; 113.26FY; ESPRESSO - VLT; P113
14. **Catarina M. J. Marques;** *An ESPRESSORedshift Drift Experiment, Part IIa*; 112.25K7; ESPRESSO - VLT; P112
15. **Catarina M. J. Marques;** *An ESPRESSORedshift Drift Experiment, Part Ib*; 111.251D; ESPRESSO - VLT; P111
16. **Catarina M. J. Marques;** *An ESPRESSORedshift Drift Experiment, Part Ia*; 110.247Q; ESPRESSO - VLT; P110
17. **Pedro Cunha**, Andrew Humphrey, **Jarle Brinchmann**, **Catarina Marques**, **Catarina Lobo**,Ana Paulino-Afonso, **Daniel Vaz**, Stergios Amarantidis, **Israel Matute**, **Jose Afonso**,**Polychronis Papaderos**; *Can 'line-dark radio' galaxies in the redshift desert reveal the impact of AGN feedback on QSO2 progenitors?;* 080-25; EMIR/IRAM-30m; 06/09/2025 - 08/09/2025
18. **Ana Rita Costa Silva;** NIRPS Consortium; guaranteed time observations; NIRPS+HARPS, 3.6m telescope (La Silla,European Southern Observatory); 7 nights (24 February - 3 March 2025
19. **Clara Sousa Silva**: PI: Lauren Mendoza (my undergraduate student); PROPOSAL NO.: 2025B098; TITLE: Infrared Detection and Characterization of the Presence of Phosphine on Venus; Awarded 2 nights on IRTF-TEXES
20. **Jennifer Peralta Lucero, Eduardo Cristo**; NIRPS Consortium; supporting 9 nights of NIRPS & HARPS observations during GTO Run 13 with the 3.6m telescope;La Silla Observatory; july 2025