Comparison between FRANEC+ADIPLS and CESAM+ADIPLS

Marcella Marconi

INAF-Osservatorio Astronomico di Capodimonte

Coworkers: A. Ruoppo, S. Degl'Innocenti, P.G. Prada Moroni, M.J.P.F.G.M.Monteiro, J.P. Marques, J. Christensen-Dalsgaard

Porto, November 22, 2006

Selection of the models

We selected cases 1.1 and 1.4 from CoRoT ESTA TASK 1 model set:

Mod	M/Mo	Y	Z	X_c	$T_c/10^7$ (K)
1.1	0.9	0.28	0.02	0.35	
1.4	2.0	0.28	0.02		1.90

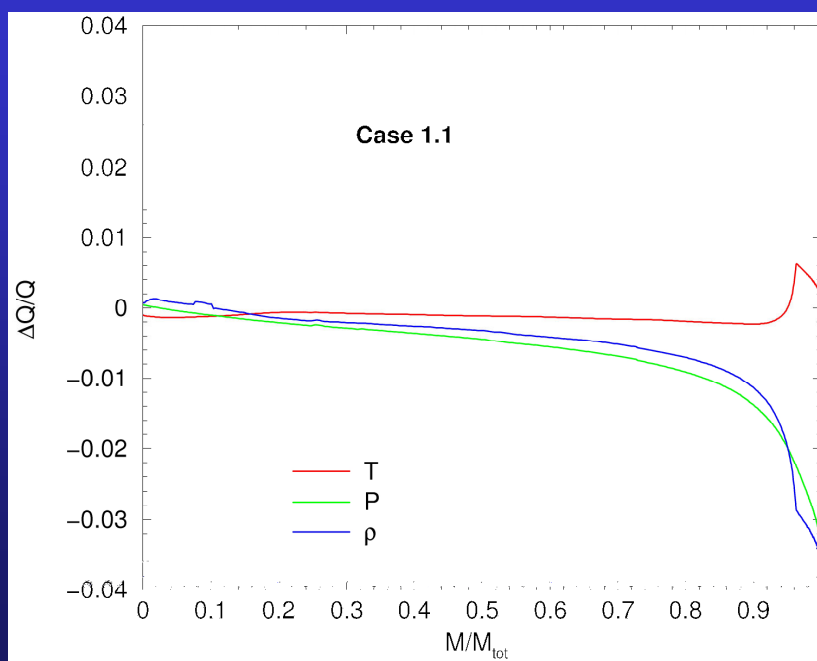**Porto,** November 22, 2006

- Stellar models for cases 1.1 and 1.4 are computed with FRANEC and CESAM

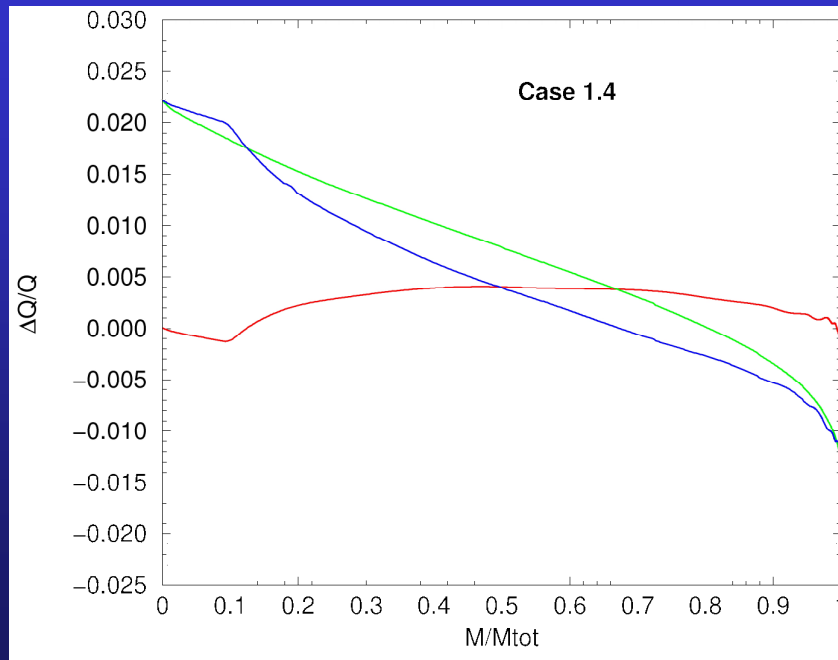- Physical assumptions as specified in the context of CoRoT ESTA TASK 1

- **Frequencies are computed by applying to the results of both evolutionary codes the ADIPLS package**
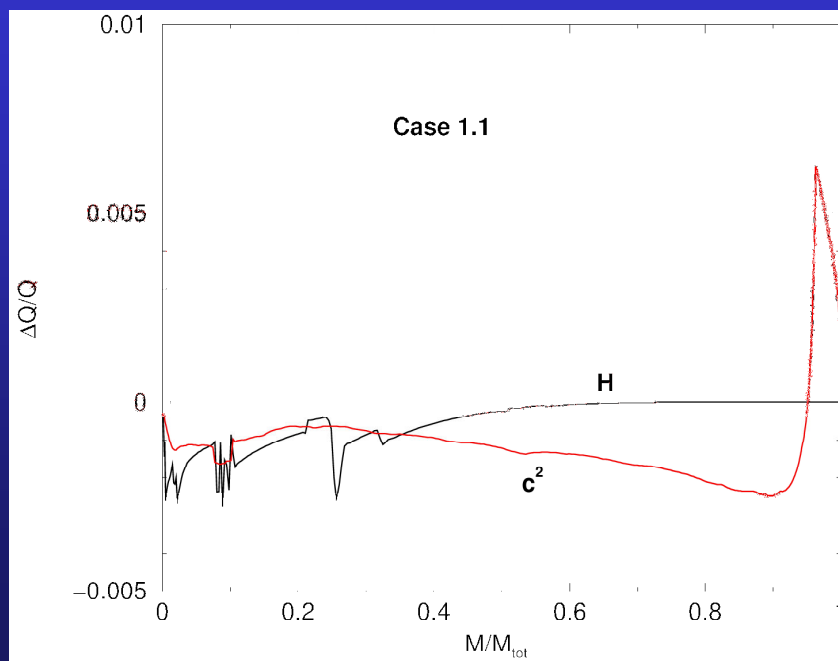
Porto, November 22, 2006

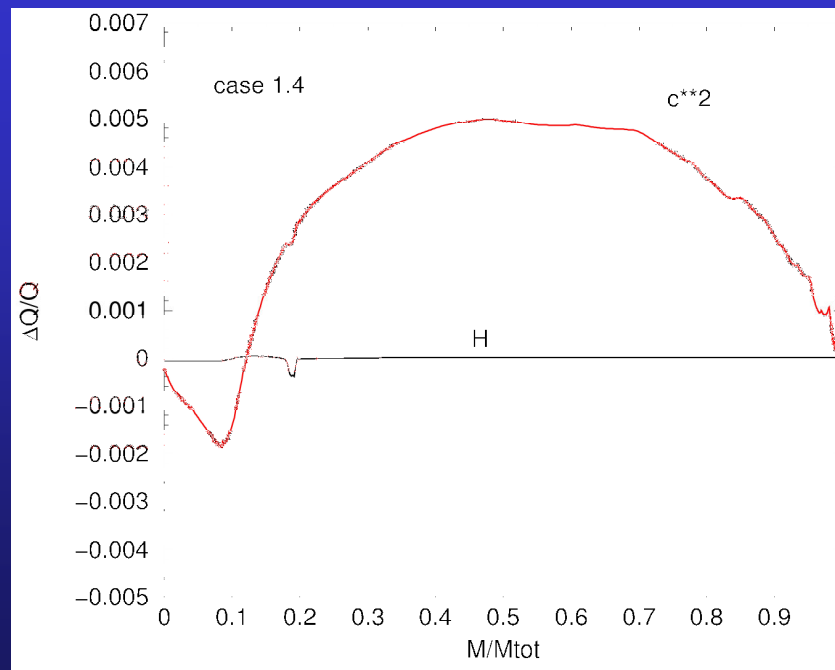## Comparison of relevant physical quantities: case 1.1

Comparison of relevant physical quantities: case 1.4

Comparison of H profile and c²: case 1.1
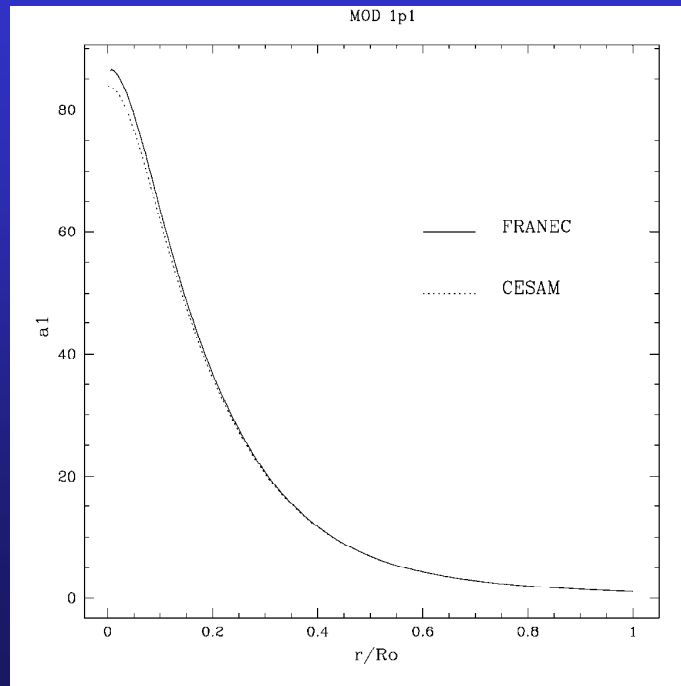
Comparison of H profile and c^2: case 1.4
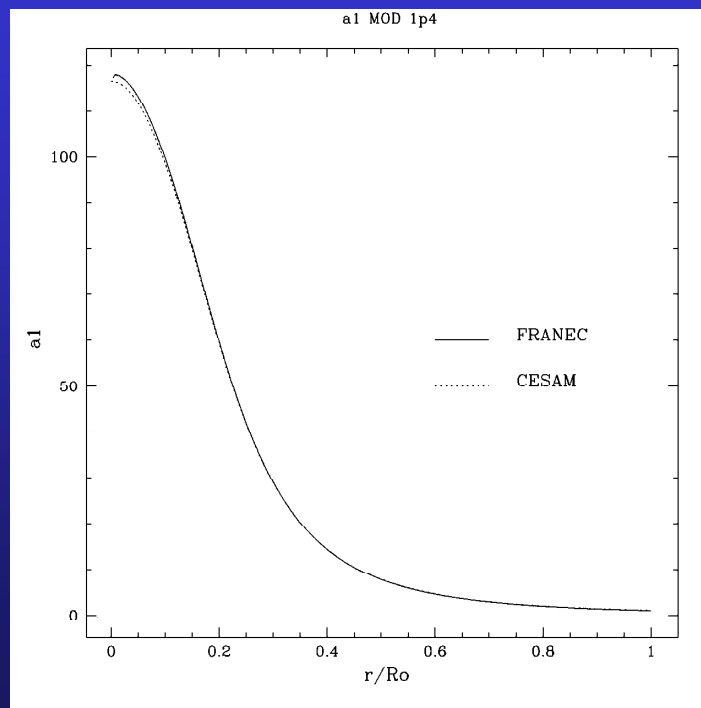

Model variables to be used by ADIPLS

- $a_1 = q/x^3 \quad q=m/M \quad x=r/R$
- $a_2 = -1/\Gamma_1 \, d\ln P/d\ln r$
- $a_3 = \Gamma_1$
- $a_4 = 1/\Gamma_1 \, d\ln P/d\ln r - d\ln\rho/d\ln r$
- $a_5 = 4\pi\rho r^3/m$

We computed all these quantities starting from the output of the FRANEC code and compraed them with the corresponding ones obtained with CESAM
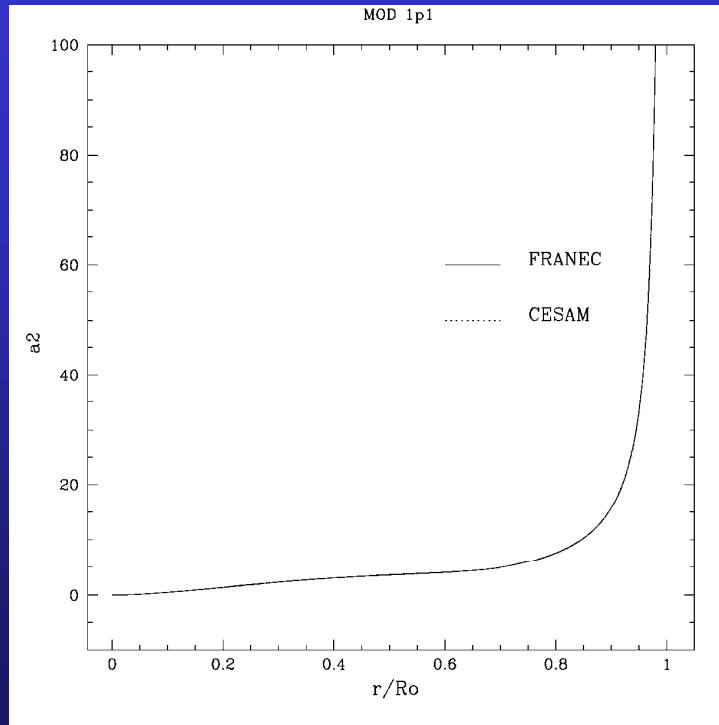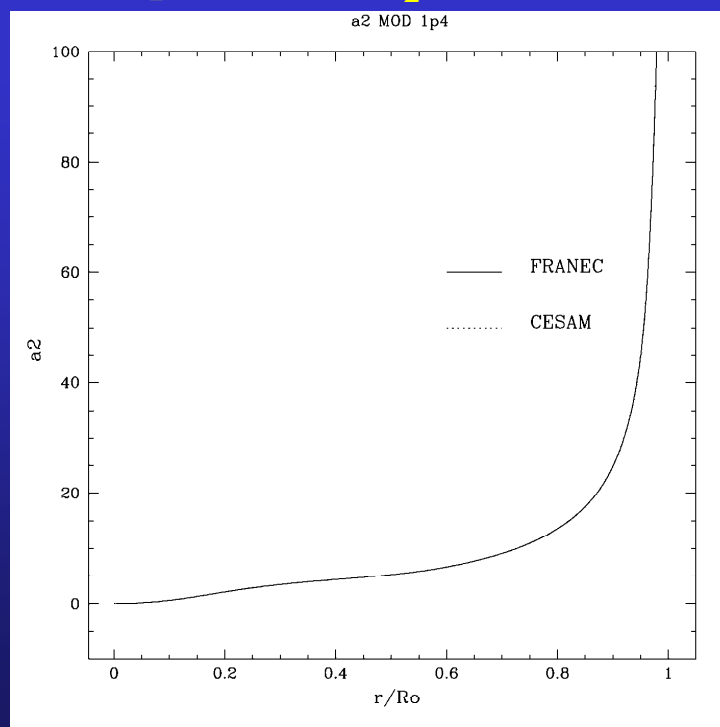
Comparison of a_1 for case 1.1
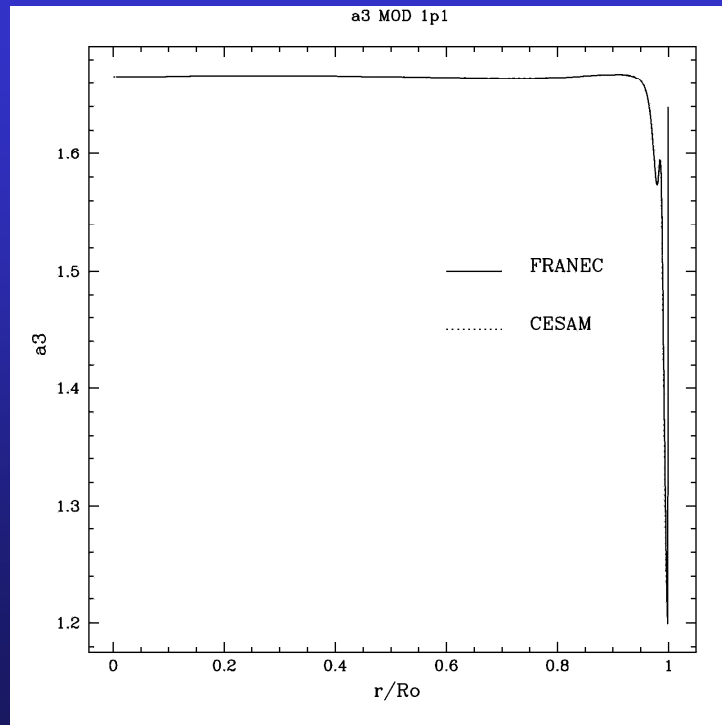

Comparison of a_1 for case 1.4
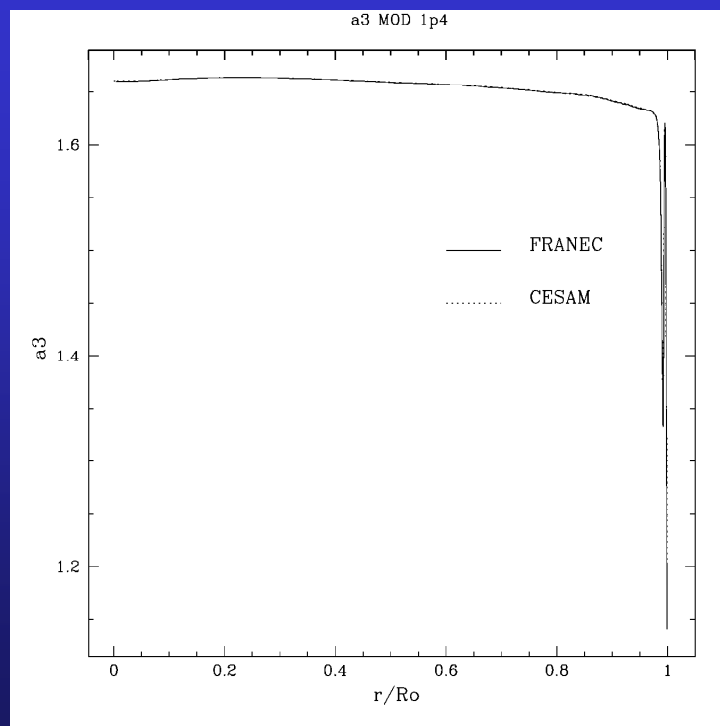
Comparison of a₂ for case 1.1

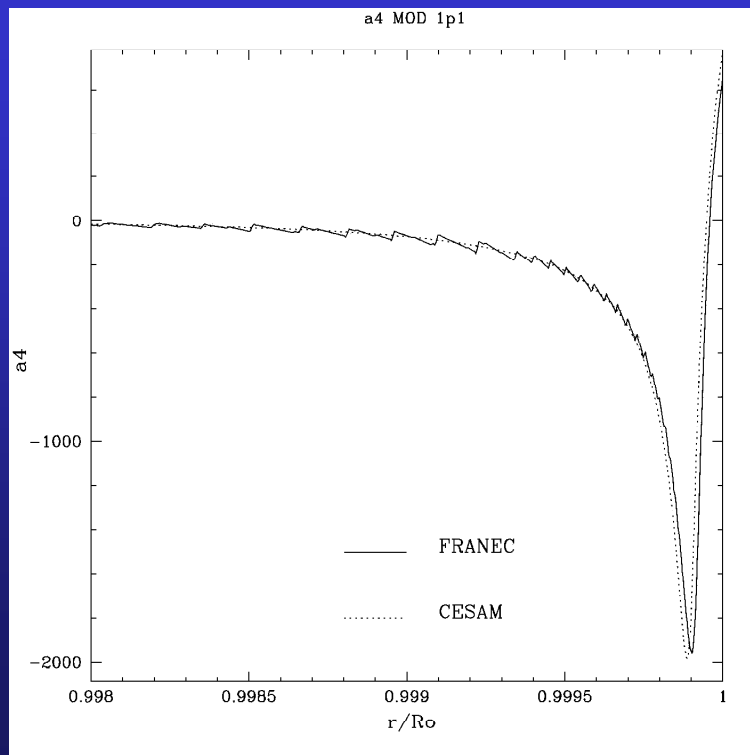# Comparison of a₂ for case 1.4

Comparison of a₃ for case 1.1

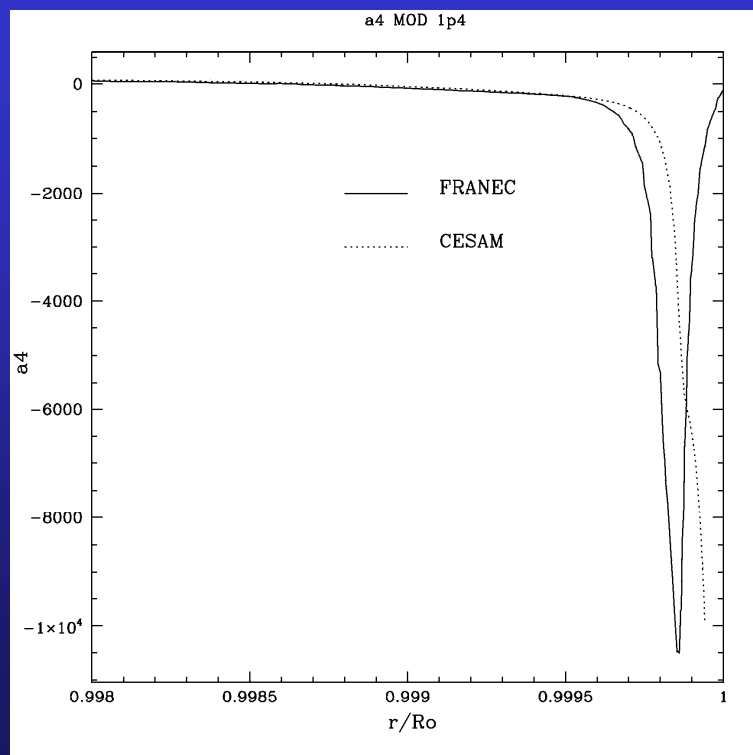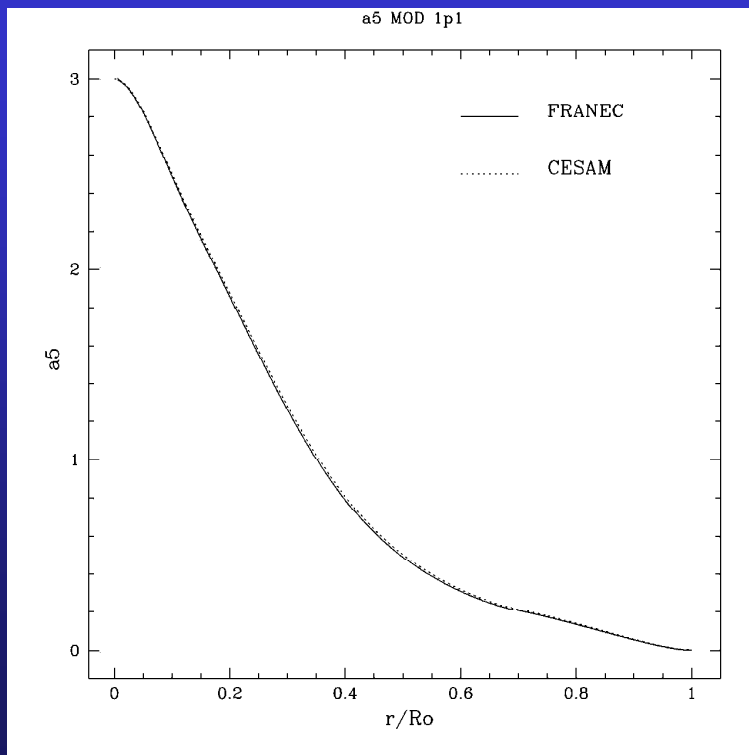# Comparison of a₃ for case 1.4
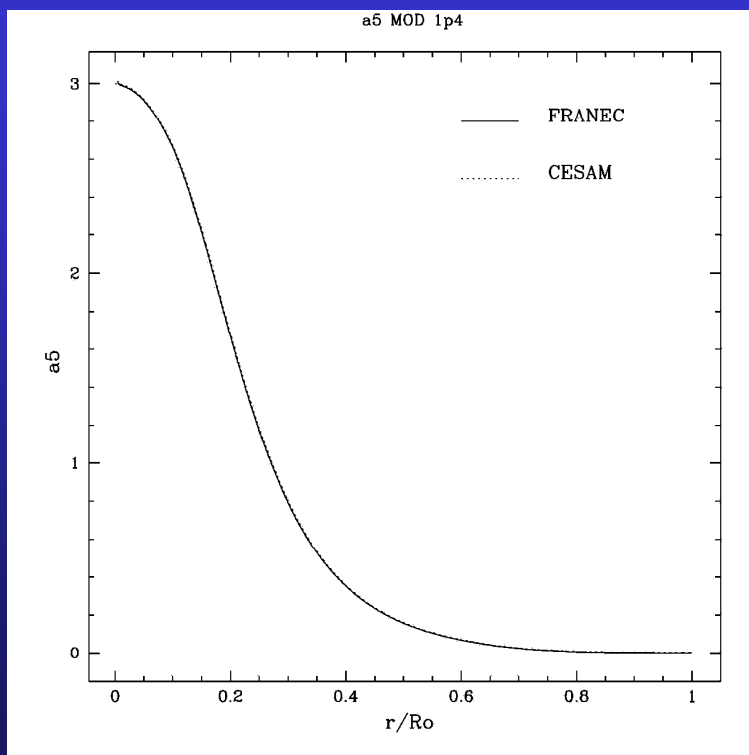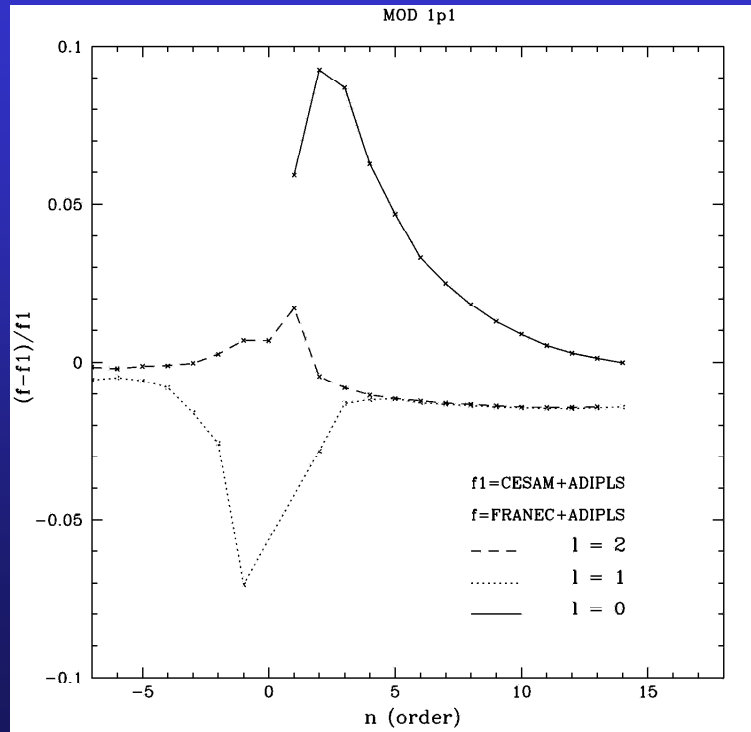
Comparison of a_4 for case 1.1

a4 MOD 1p1

FRANEC

CESAM

Comparison of a_4 for case 1.4

a4 MOD 1p4

FRANEC

CESAM

Comparison of a_5 for case 1.1

a5 MOD 1p1

Comparison of a_5 for case 1.4

a5 MOD 1p4

Comparison of the resulting frequencies for case 1.1

Comparison of the resulting frequencies for case 1.4