

Erratum: New comparisons for large frequencies. Good news.

7th December 2006

In the last workshop of Porto I showed some comparison between frequencies given by different codes. Some unexpected differences appears and part of the discussion was focused on the reasons of them and how to proceed.

One of these differences where found at large frequencies, where the number of mesh points in the outer layers is important. There was one bug when the differences between POSC (taken as reference) and NOC (Nice COde) were obtained. Fig. 1 is the corrected plot. Here also the new frequencies coming from ROMOSC with the correct mechanical outer boundary condition have been included.

In this Fig. 1, frequency differences as compared with POSC have been plotted, for $\ell = 0$ and 2. In both cases, for large frequencies we can split into two groups of codes (except ROMOSC and Filou), one close to 0, that is, similar to POSC, and other with NOC, ADIPLS and GraCo. The differences are smaller than $2 \mu Hz$ for the largest compared frequency.

Once this bug has been corrected and the right comparisons done, the next step is to understand the reasons. As NOC and ADIPLS have also provide frequencies using Richardson extrapolation, I have re-done Fig. 1 with these frequencies. Comparisons are plotted in Fig. 2.

In this Fig. 2 we see how when this extrapolation is used, the results of these codes are similar to those coming from POSC.

To better illustrate this, Fig. 3 shows only the comparisons of NOC and ADIPLS as compared with POSC.

Therefore, it seems that the answer for these differences can be the use or not of the Richardson extrapolation. It would be useful if every programmer provide information about if they have calculate these frequencies with or without Richardson extrapolation and the variable of integration used (r or r/P), to disentangle what the reason of the differences is.

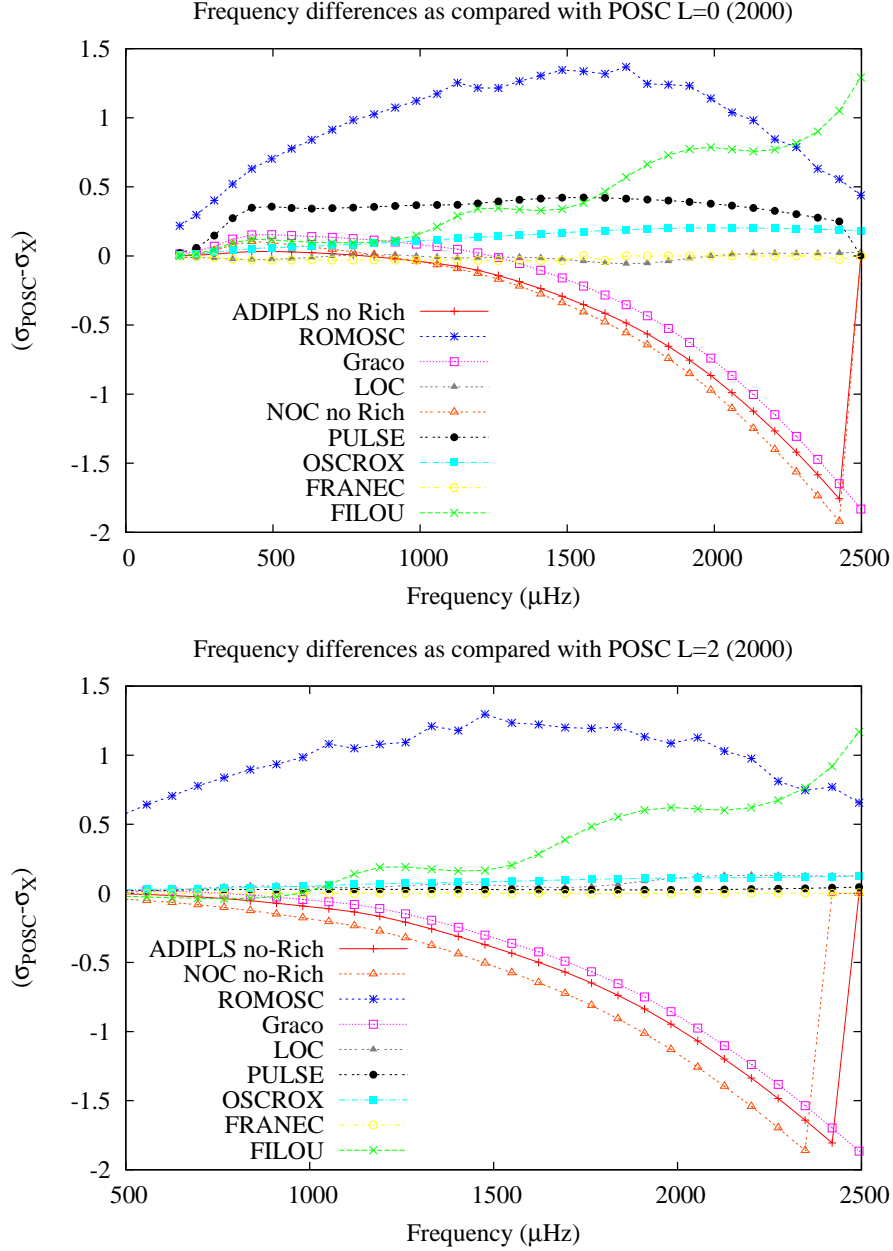


Figure 1: Frequencies differences as compared with POSC for $\ell = 0$ and 2, for the large frequencies part of the spectrum. NOC and ADIPLS without Richardson extrapolation.

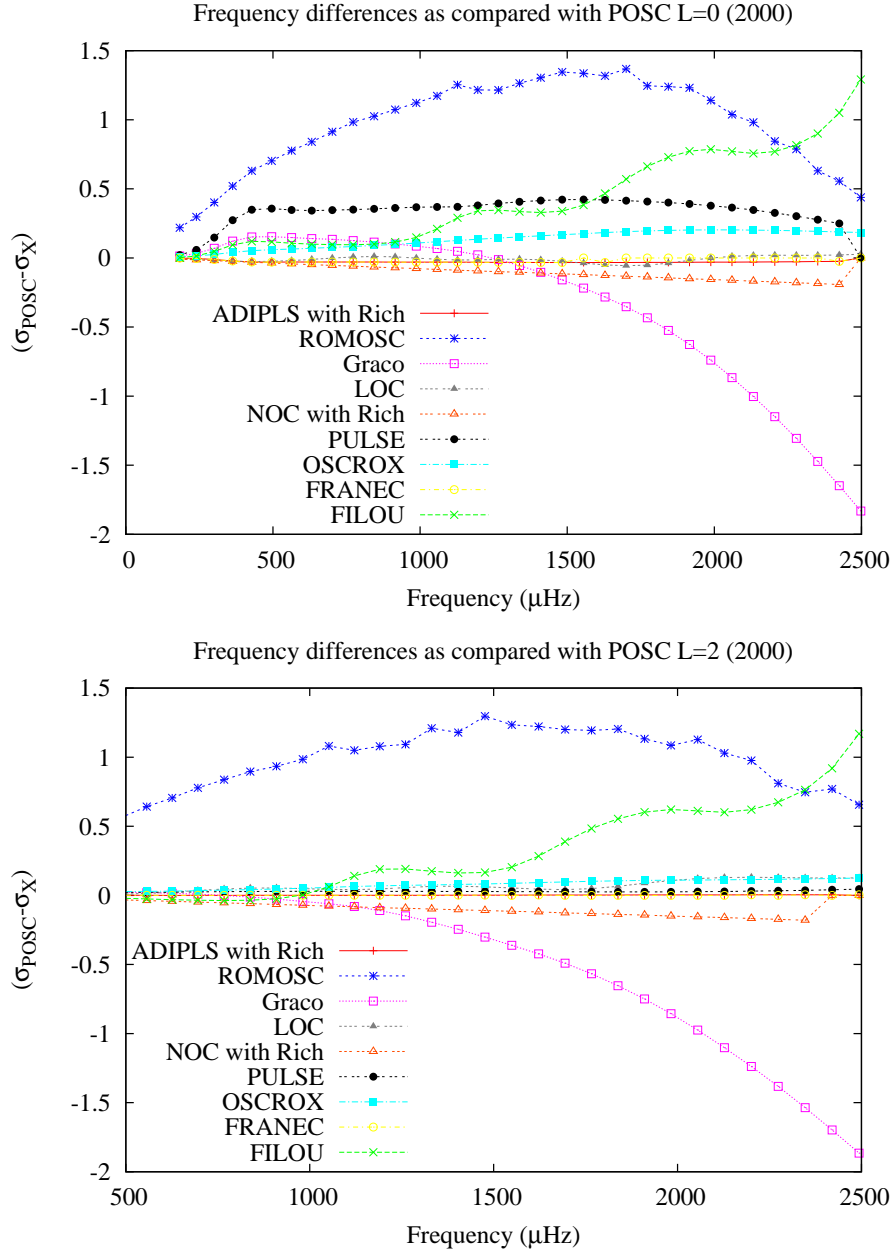


Figure 2: Frequencies differences as compared with POSC for $\ell = 0$ and 2, for the large frequencies part of the spectrum. NOC and ADIPLS with Richardson extrapolation

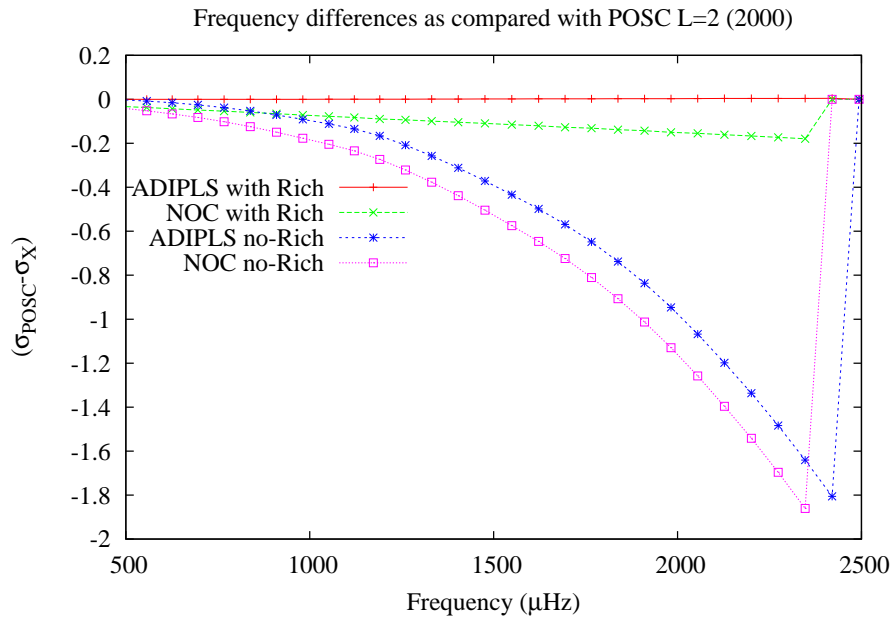


Figure 3: Frequencies differences as compared with POSC for $\ell = 2$ for the large frequencies part of the spectrum. NOC and ADIPLS with and without Richardson extrapolation