G T2 Excitation of oscillations in roAp stars: the role of chemical diffusion and winds

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The abundance distribution of some chemical elements near the surface of rapidly oscillating Ap (roAp) stars influences the process responsible for the excitation of the observed oscillations. In particular, the stability of a given model to pulsation and the frequency of the modes excited, depend directly on the helium and hydrogen profiles which, in turn, depend on physical processes like diffusion and stellar winds.

In this work we investigate the effect of different chemical profiles, derived through evolutionary models including helium diffusion and stellar winds of different strengths, on the stability to pulsations of cool Ap stars. We pay particular attention to the effect of the chemical profiles on the red edge of the theoretical instability strip and on the stabilization of modes which frequencies are lower than the typical frequencies observed in roAp stars. We consider models with and without wind, and compare the results with the observations available so far.