

Figure S1: Phase diagrams for the six accepted frequencies f_1, \ldots, f_6 after subsequent stages of prewhitening for the Geneva U data of HD 129929. The dots are the observations and the full line is a harmonic fit for the indicated frequencies whose values are listed in Table 1.



Figure S2: Weighted normalized kinetic energy density \mathcal{E} as a function of distance r (expressed in units of the stellar radius R) for the three axisymmetric modes in a model with parameters $M = 9.35 M_{\odot}$, Z = 0.0188, $\log T_{\text{eff}} = 4.35, \log g = 3.905$. The solid, dashed and dashed-dot lines are for $\ell = 0, \ell = 1, p_1$ and $\ell = 2, g_1$ modes, respectively. The position of the end of the convective core is indicated by the thick vertical full line while the limit of the mixed zone due to overshooting is positioned at the vertical dotted line.



Figure S3: Positions in the gravity (log g) versus effective temperature (log T_{eff}) diagram of the stellar models which satisfy the two observed frequencies f_5 and f_2 of the radial and dipole axisymmetric modes. M stands for the mass of the star and Z for the metallicity. The squares, dots, and triangles represent models where the overshooting parameter $\alpha_{\text{ov}}=0, 0.1$, and 0.2 respectively. Arrows point towards models for which the $\ell = 2, g_1$ mode also fits the observed value. All accepted models are situated between those indicated with the arrows. The observational error box is also represented.