

The upper layers of Alpha-Centauri A: footprint of a new rapid variation layer

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Abstract

Probing the structure of the upper layers of Sun-like stars is crucial to determine the physical mechanisms responsible for convection and magnetism in stars. In this work we use a nonlinear seismic diagnostic to infer the background structure responsible for the scattering of acoustic waves. By applying a seismic technique originally developed for the solar acoustic spectrum to the measurement of solar Helium abundance, from the acoustic oscillations of Alpha Centauri A we have discovered the existence of an unexpected glitch located 6% beneath the photosphere. Current theoretical stellar models do not predict this glitch. With the large amount of high quality asteroseismic data made available by COROT and Kepler missions, the use of this new technique can help to better understand the envelopes of solar type stars.

