Precision asteroseismology of the pulsating white dwarf GD 1212 using a two-wheel-controlled Kepler spacecraft

J.j. Hermes*†[1]

[1]University of Warwick – United Kingdom

Abstract

We present a preliminary analysis of the cool pulsating white dwarf GD 1212, enabled by more than 11.5 days of space-based photometry obtained during an engineering test of the two-reaction-wheel-controlled Kepler spacecraft. We detect at least 19 independent pulsation modes, ranging from 828.2-1220.8 s, and at least 17 nonlinear combination frequencies of those independent pulsations. Our longest uninterrupted light curve, 9.0 days in length, evidences coherent difference frequencies at periods inaccessible from the ground, up to 14.5 hr, the longest-period signals ever detected in a pulsating white dwarf. These results mark some of the first science to come from a two-wheel-controlled Kepler spacecraft, proving the capability for unprecedented discoveries afforded by extending Kepler observations to the ecliptic.

*Speaker

†Corresponding author: j.j.hermes@warwick.ac.uk