PULSATIONS IN A DB WHITE DWARF

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V777 Herculis stars are pulsating white dwarfs of intermediate temperature (Teff ~ 20,000 - 30,000 K) and pure helium atmospheres. They have evolved past the asymptotic giant branch stage, and must have suffered a late thermal pulse that has removed practically all remaining hydrogen from the star. We propose to observe KIC 8626021 in Short Cadence mode for the duration of Cycle 4 of the Kepler Mission, and beyond. This target was identified as a pulsating white dwarf of the rare V777 Her type based on one month of Kepler short cadence data from Q7 by Østensen et al.(2011 ApJ 736 L39). Recently, an asteroseismic analysis of the target by Bischoff-Kim & Østensen (2011 ApJ 742 L16) has demonstrated that it is significantly hotter than the temperature indicated by the preliminary spectroscopy, which opens up the prospect of probing the fundamental physics of plasmon neutrino cooling by measuring the period changes in the pulsation periods. V777 Her stars are in themselves very rare objects of which only ~20 are known, but pulsators at the hot edge of the instability strip are exceedingly rare with only a single object firmly established in the literature. Because this star is faint (Kp=18.47), ground based data of sufficient quality and duration is extremely difficult to obtain. Kepler's unwavering gaze, on the other hand, has no problem detecting the pulsations with excellent quality, and we predict that a significant detection of neutrino emission can be made in four years or less.