KEPLER OBSERVATIONS OF A UNIQUELY VARYING WHITE DWARF SYSTEM

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We propose to observe a uniquely varying white dwarf system (BOKS 53836) recently discovered within the Kepler field. It was found in the Burrell-Optical-Kepler Survey as a blue object with a low amplitude light curve (0.04 mags) having a period of 0.255 days. There are strong reasons to believe that this system consists of a hot white dwarf star and a substellar companion; either a brown dwarf or a large Jupiter-like planet. Kepler observations of this very rare type of system are requested to accurately measure the light curve of this system. The suspected origin of the light curve is a reflection effect produced by light from the white dwarf on the atmosphere of the companion. Kepler data can confirm this and provide the high quality light curve which the effect can be physically modeled thereby shedding light on the nature of the companion, in particular its radius. Kepler data will also reveal any evidence of transient effects such as stellar activity or mass transfer associated with the secondary body.