A Search for Eclipsing Jovian Companions to M Dwarfs Using the 2MASS Calibration Database

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- We are conducting a near-infrared variability search using the 2MASS Calibration Database. This multi-band and multi-epoch database provides an opportunity to search for eclipsing systems.
- With these data, we can detect a short-period Jovian planet or brown dwarf transiting an M Dwarf, producing a deeper eclipse than for a G-type star.
- From ~7500 targets selected for their near-infrared colors, we have identified several hundred variables (mostly AGN) and three late-type dwarf eclipsing systems, including two Jovian transit candidates.
- We will place constraints on the abundance of short-period Jovian companions to M Dwarfs.

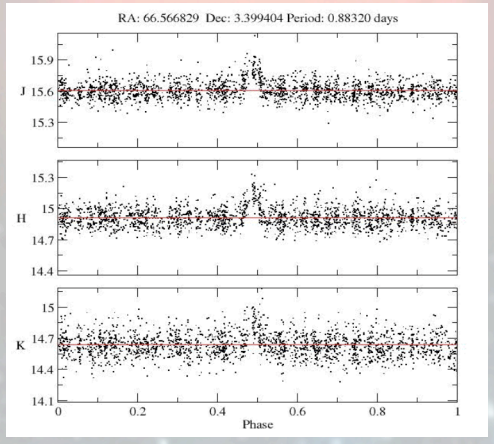

Figure 1. Transit candidate discovered in 2MASS Calibration Database. We will obtain precise photometric measurements of the eclipse and high-resolution radial velocities to distinguish between two partially eclipsing ~M2 dwarfs with a period of ~42 hours, or an ~M2 dwarf with an eclipsing sub-stellar companion with a period of ~21 hours.

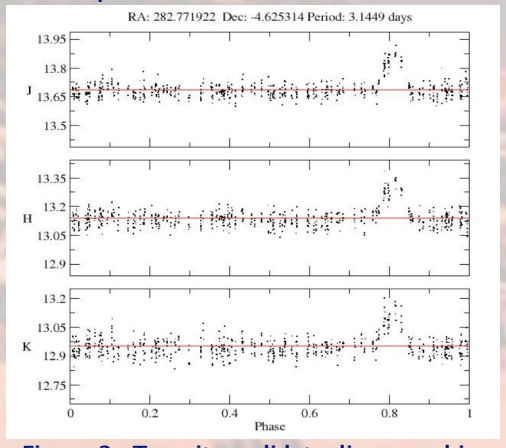

Figure 2. Transit candidate discovered in 2MASS Calibration Database. Available photometry indicates that the primary is a late-type K dwarf. From additional precise photometric observations of this system, we will be able to determine the relative size of the secondary.