

MEASURING THE MASSES AND RADII OF THE LOWER MAIN SEQUENCE: IDENTIFICATION OF NEW ECLIPSING M DWARFS

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We propose to use Kepler to search for new, low-mass main-sequence eclipsing binaries. Recent studies of eclipsing low-mass stars have shown that the radii of late-type dwarfs are consistently 10-15% larger than predicted by stellar models. The cause for this might be enhanced activity due to their binarity. If so, such an affect should diminish with increasing semi-major axis. Unfortunately, only a single system has a period > 3 days, thus this hypothesis cannot be tested. What is needed are additional eclipsing low-mass dwarfs. We restrict our target list to $15 < g < 18$ to avoid overlap with the reserved list, while greatly expanding the number of potential late-type binary systems by surveying to larger distances. We will use NMSU resources at Apache Point Observatory to obtain follow-up photometry and spectroscopy to determine the fundamental parameters of the components in each system. We will also put to good scientific use all data gathered on targets that turn out to be single stars.