GROUND-BASED FOLLOW-UP AND LIGHT CURVE MODELING OF ECLIPSING BINARIES TO DETERMINE LIMB DARKENING EFFECTS FOR THE KEPLER BANDPASS

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We will use NMSU facilities to obtain UBVRI light curves of a set of eclipsing binaries in the Kepler field of view to ascertain the limb darkening for the broad Kepler bandpass. As we show below, limb darkening strongly affects the values of physical parameters extracted from exoplanet transits. The Kepler bandpass is very broad, and therefore the derived, mean limb darkening cannot be easily predicted. This is especially true given that limb darkening for normal stars has been shown to be in error by +/- 10 to 20%. We have independently analyzed the Kepler public release data set to identify deep eclipsing binaries spanning the spectral type range A to K. We concentrate on systems with similar temperatures for both components. We will obtain ground-based, multi-wavelength light curves and simultaneously model them using a modified version of JKTEBOP to to derive the limb darkening. In this way, we will construct a data base of observationally determined limb darkening coefficients for the Kepler bandpass.