

# Jeff Coughlin

## New Mexico State University

### **Thesis Project: Precise Limb-darkening Determination for Proper Transit Modeling**

- Limb-darkening (LD) in transit curve modeling is very important yet often neglected.
- Current LD coefficients come from model atmospheres – in error by up to 20%!
- Can use high-precision, multi-wavelength data of eclipsing binaries and transits to observationally determine limb-darkening coefficients for a wide range of host star properties.
- Have developed simultaneous 6-channel, high-speed, avalanche photo-diode photometer for use on the NMSU 1-meter telescope.
- Will allow for more precise determination of radii, inclination, and atmospheric properties.
- Ultimately will use narrow-band filters to detect atomic \ molecular features.

### **Other projects**

- Timing and Parameter Variation Studies. (Have previously worked on Gliese 436b).
- Low-mass eclipsing binaries for mass-radius determination of lower main-sequence.
- SIM spacecraft modeling of multi-wavelength reflex motion of binary systems.
- Kepler spacecraft data for long-period, low-mass eclipsing binaries, as well as M and K dwarf spot, rotation, and flare studies.

# HD 209458b

