

# The Study of Binaries with Occultations

M. W. Buie<sup>1</sup> and J. M. Keller<sup>2</sup>

<sup>1</sup> Southwest Research Institute, Boulder, CO, USA

<sup>2</sup> California Polytechnic State University, San Luis Obispo, CA, USA

contact e-mail: *buie@boulder.swri.edu*

In recent years, direct imaging and lightcurve observations have come of age for the discovery of asteroid satellites. As powerful as these techniques have proven to be, they both suffer limitations and biases. Direct imaging is limited by the resolution of the telescope and camera system. Lightcurve searches are dependent on special geometries to see mutual events. Stellar occultations are a third technique that has been in use for decades for size and shape measurements with an occasional binary object. Occultations have a lot of promise for providing complementary measurements to direct imaging and lightcurves by being especially sensitive to close-separation binaries regardless of viewing geometry. The Research and Education Collaborative Occultation Network (RECON) has been in operation since April 2015 and is uniquely capable of searching for close companions for Centaurs and TNOs. We will present a summary of the RECON project and illustrate its capabilities by showing recent results of a stellar occultation by the Jupiter Trojan asteroid, Patroclus and its nearly equal size moon, Menoetius. Successful observations of an occultation by (229762) 2007 UK126 will also be shown as an example of working with faint TNO events. The synergy between the large RECON footprint and expected results from the ESA Gaia mission will also be discussed.