



## Detection of the Secondary Eclipse of Exoplanet HAT-P-11b

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### Abstract

We have successfully conducted secondary eclipse observations of exoplanet HAT-P-11b using the Spitzer Space Telescope. HAT-P-11b was, until very recently, the smallest transiting extrasolar planet yet found and one of only two known exo-Neptunes. We observed the system at 3.6 microns for a period of 22 hours centered on the anticipated secondary eclipse time, to detect the eclipse and determine its phase. Having detected the secondary eclipse, we are at present making a more focused series of observations in both the 3.6 and 4.5 micron bands to fully characterize it. HAT-P-11b has a period of 4.8878 days, radius of 0.422 RJ, mass of 0.081 MJ and semi-major axis 0.053 AU. Measurements of the secondary eclipse will serve to clarify two key issues; 1) the planetary brightness temperature and the nature of its atmosphere, and 2) the eccentricity of its orbit, with implications for its dynamical evolution. A precise determination of the orbit phase for the secondary eclipse will also be of great utility for Kepler observations of this system at visible wavelengths.