

A Spitzer Survey of Exoplanet Secondary Eclipses

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The Spitzer Space Telescope detected the first exoplanetary photons in 2004, with groups led by Charbonneau (TrES-1) and Deming (HD 209458b) publishing simultaneously in early 2005. Since then, we and others have surveyed dozens of exoplanets' eclipse fluxes in as many as six broadband mid-IR channels. Numerous hypotheses have been advanced to explain the data for individual planets, but the breadth of the channels (the narrowest about 1 micrometer wide), their small number, and the strong systematics of Spitzer preclude the data from speaking too confidently about the properties of individual planets. However, by plotting simply the input stellar flux against the observed flux, we do find some gross trends that can be interpreted in terms of planetary behavior. We present this plot with the latest data for about 30 planets, discuss the trends and possible explanations, and outline the kinds of questions EChO can address by taking a model-independent, survey approach to the population of exoplanet spectra.