THEORETICAL INTERPRETATION OF KEPLER EXOPLANET ALBEDOS AND REFLECTED LIGHT CURVES

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The existence of extrasolar planets is now firmly established with over 200 planets known to orbit nearby Sun-like stars. The next important advances in this field are characterizing the physical properties of exoplanets, specifically their densities and atmospheres. Indeed, hot Jupiter exoplanet atmospheres are now routinely measured with the Spitzer Space Telescope. Spitzer has found that hot Jupiter exoplanets are hot and likely dark. But how dark and how hot globally remains unknown. An important missing piece of information for the hot Jupiter class as a whole is their albedos: how much of the incident stellar energy is reflected and how much is absorbed? Measured albedos or upper limits across the whole visible wavelength range would tell us about the planet's energy balance, equilibrium effective temperature, and possible planet atmosphere composition. The energy balance plays a critical role in atmospheric circulation and in governing the partition of molecular species that we try to observe in the planet atmosphere. We propose to interpret the Kepler albedos and reflected light phase curves of hot Jupiter exoplanets using our existing suite of model atmosphere codes.