
Phase Curves of the Kepler-11 Multi-Planet System

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Abstract

The Kepler mission has allowed the detection of numerous multi-planet exosystems where the planetary orbits are relatively compact. The first such system detected was Kepler-11 which has six known planets at the present time. These kinds of systems offer unique opportunities to study constraints on planetary albedos by taking advantage of both the precision timing and photometry provided by Kepler data to monitor possible phase variations. Here we present a case study of the Kepler-11 system in which we investigate the phase modulation of the system as the planets orbit the host star. We provide predictions of maximum phase modulation where the planets are simultaneously close to superior conjunction. We use corrected Kepler data for Q1-Q17 to determine the significance of these phase peaks. We find that data quarters where maximum phase peaks occur are better fit by a phase model than a "null hypothesis" model.

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