EPSC Abstracts,
Vol. 2, EPSC2007-A-00386, 2007
European Planetary Science Congress 2007

Stability of short period extrasolar planets in the face of tidal forces

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Very close-in extrasolar planets are subject to strong tidal interactions with their host star. This may lead to the decay of the semi major axis and to an non-negligable spin-up of the star. The magnitude of tidal interactions, however, depends on the ratio of the stellar dissipation factor and the stellar Love number. Different theoretical predictions give values which cover five orders of magnitude.

We were able to constrain the large uncertainties of this constants by simulating the evolution of the planetary system OGLE-TR-56b into the past and into the future thus gaining important insights into the inner structure of the host stars.

With better surveys and the operation of the first space mission CoRoT in search for extrasolar planets, we will be able to refine our method. In preparation for the large numbers of short period planets to be detected we present a systematic study of the conditions for which the existence of short period planets can be excluded depending on the stellar dissipation factor and the stellar Love number.