



Prospects of the Detection of Circumbinary Planets With Kepler and CoRoT Using the Variations of Eclipse Timing

Richard Schwarz (1), Nader Haghighipour (2), Siegfried Eggl (1), Elke Pilat-Lohinger (1), and Barbara Funk (3)

(1) Institute for Astronomy, University of Vienna, A-1180 Vienna, Türkenschanzstrasse 17, Austria (siegfried.eggl@univie.ac.at), (2) Institute for Astronomy and NASA Astrobiology Institute, University of Hawaii, 2680 Woodlawn Dr., Honolulu, HI, 96822 USA, (3) Department of Astronomy, Eötvös University, H-1117 Budapest, Pazmany Peter setany 1/A, Hungary

In close eclipsing binaries, measurements of the variations in binary's eclipse timing may be used to infer information about the existence of circumbinary objects. To determine the possibility of the detection of such variations with CoRoT and Kepler space telescopes, we have carried out an extensive study of the dynamics of a binary star system with a circumbinary planet, and calculated its eclipse timing variations (ETV) for different values of the mass-ratio and orbital elements of the binary and the perturbing body. Here, we present the results of our study and assess the detectability of the planet by comparing the resulting values of ETVs with the temporal sensitivity of CoRoT and Kepler. Results point to extended regions in the parameter-space where the perturbation of a planet may become large enough to create measurable variations in the eclipse timing of the secondary star. Many of these variations point to potentially detectable ETVs and the possible existence of Jovian-type planets.