

Vertical stability of co-orbital planetary systems

P. Robutel (1), A. Leleu (2)

(1)IMCCE, Observatoire de Paris - PSL Research University, UPMC Univ. Paris 06. Paris, France
(philippe.robutel@obspm.fr) (2)Physikalisches Institut, Universität Bern, Gesellschaftsstr. 6, 3012 Bern, Switzerland

Abstract

Although a significant number of multi-planetary systems contain bodies in (or close to) mean-motion resonances [1], thus far, no planet was found in co-orbital resonance (1:1 mean-motion resonance). The detection of co-orbital exoplanets is challenging for several reasons [2][3]. We are interested here in one of these: the fact that the planets do not orbit in the same plane, which can prevent the transit of, at least, one of the bodies. In this talk, we explore the stability domain in the spatial case. We pay a particular attention to the phenomena that generate the transition from stability to instability that are resonances and bifurcations.

References

- [1] Fabrycky, D. C., Lissauer, J. J., Ragozzine, D., et al., *apj*, 790,146, 2014
- [2] Leleu, A., Robutel P. Correia A. C. M. and Lillo-Box J. , *A&A*, Vol. 599, L7, 2017
- [3] Lillo-Box, J., Barrado, D., Figueira, P., et al., *A&A*, 609, A96, 2018