

**Author: M. EL MOUTAMID**

Cornell University (USA)

**Title:** “*Chaos and Capture into Mean-Motion Resonances for Exoplanetary Systems*”

**Abstract.** Many bodies in the Solar System and some exo-planets are close to or captured in Mean Motion Resonances (MMR). Capture into such resonances has been investigated by many authors. Indeed, the Hamiltonian equations of motion in presence of migration are given by Sicardy and Dubois, *Cel. Mech. & Dyn. Astron.*, **86**, 321–350 (2003). Fleming and Hamilton, *Icarus* **148**, 479–493 (2000), studied the problem in a less generic context. In these two papers, the authors studied the problem of 1 : 1 corotation (Lagrange points L4 and L5), rather than  $m + 1 : m$  corotations (El Moutamid et al., *Cel. Mech. & Dyn. Astron.*, **118**, 235–252 (2014)). We will present a generic way to analyze details of a successful (or not) capture in the case of an oblate (or not) central body in the context of Restricted Three Body Problem (RTBP) and a more General Three Body Problem in the context of known statistics for captured exoplanets (candidates) observed by Kepler.

Joint work with B. Sicardy, Wenrui Xu, S. Renner and Dong Lai.