Abstract Submitted
for the TSS18 Meeting of
The American Physical Society

Stable Orbits for Exomoons in Earth's Cousin (Kepler-452b) Orbiting a Sun-like Star NIYOUSHA DAVACHI, MARIALIS ROSARIO-FRANCO, SERGIO GARZA, ZDZISLAW MUSIELAK, University of Texas at Arlington — Kepler 452b, also nicknamed Earth's cousin, was discovered orbiting the habitable zone (HZ) of a G2 Star (Jenkins et al. 2015). This exoplanet is considered a super Earth, with a mass of 5 2 Mass of Earth and a radius of 1.11 Radius of Earth; and is arguably the first rocky, habitable exoplanet to orbit a sun-like star. With a period of 385 days, conditions are prompt to be similar to those of Earth, and while Kepler-452b orbits the HZ of its parent star, its habitability could also be affected by the presence of an exomoon. Motivated by the need to understand conditions of habitability and orbital stability of Kepler-45b, we have performed a series of N-body integrations to examine the possibility of the exoplanet hosting an exomoon(s). Our results give a range of physical parameters leading to stable orbits for exomoons around this habitable super Earth.

Niyousha Davachi
University of Texas at Arlington

Date submitted: 03 Mar 2018 Electronic form version 1.4