Abstract Submitted
for the GEC19 Meeting of
The American Physical Society

**Study on the Dynamics and Stabilities of Motions of the Trojan Asteroids** RICHARD KYUNG, JUWON MOON, RISE Research Group — Trojan asteroids are small celestial bodies that share the stable orbits of planets or large moons. They move ahead or behind the main body to near one of its Lagrangian points. The study of Trojan asteroids is one of the popular fields of astronomical dynamics. The three-body problem in astronomical mechanics studies Lagrange points and the stabilities and motions around these points. In this paper, based on the equations of motion around Lagrange points, simulations of orbit of Trojan asteroids system were performed using the equations of the dynamics of Trojan and computer analysis. The 2D and 3D display were obtained in either inertial frame or rotating frame. Modifications of the parameters and initialization were made to change the binary system and compare the output of trajectories for different cases.

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Date submitted: 02 Aug 2019 Electronic form version 1.4