1156-37-308 **Maxwell Musser*** (maxwell.musser@yu.edu), **Marian Gidea** (marian.gidea@yu.edu) and **Rafael de la Llave** (rll6@math.gatech.edu). *Effect of non-conservative perturbations on homoclinic and heteroclinic orbits.*

The motivation of this work comes from astrodynamics. Consider a spacecraft traveling between the Earth and the Moon. Assume that the spacecraft follows a zero-cost orbit by coasting along the hyperbolic invariant manifolds associated to periodic orbits near the equilibrium points, at some fixed energy level. We would like to make a maneuver – impulsive or low thrust in order to jump to the hyperbolic invariant manifold corresponding to a different energy level. Mathematically, turning on the thrusters amounts to a adding a small, non-conservative, time-dependent perturbation to the original system. Given such an explicit perturbation, we would like to estimate its effect on the orbit of the spacecraft.

We study this question in the context of two simple models: the pendulum-rotator system, and the planar circular restricted three-body problem. Homoclinic/heteroclinic excursions can be described via the scattering map, which gives the future asymptotics of an orbit as a function of the past asymptotics. We add a time-dependent, non-conservative perturbation, and provide explicit formulas, in terms of convergent integrals, for the perturbed scattering map. This is based on joint work with M. Gidea and R. de la Llave. (Received January 27, 2020)