1164-85-161 **Renyi Chen*** (renyi@gatech.edu), **Gongjie Li** and **Molei Tao**. *Obliquity Variations of Circumbinary Planets.*

Planet spin-axis variations play an important role in the stability of a planet's climate. In this talk, we will investigate the spin-axis variations of circumbinary planets, which are planets that orbit around stellar binaries. To do so, we will model the system as gravitational interacting rigid bodies, and use averaging method to approximate the spin-axis dynamics from equations of motion based on Andoyer and Delaunay variables. We find, physically speaking, that the large quadrupole potential of the stellar binary could speed up the planetary orbital precession, and detune the system out of spin-orbit resonances. This leads to very small obliquity variations for planets that reside near the same plane as the stellar binaries. Thus, habitable zone planets around the stellar binaries in near coplanar orbits may hold higher potential for stable climate comparing to their single star analogues. If time allows, the validation of our results by our symplectic Lie group integrators will also be briefly described. (Received January 17, 2021)