PHYSICS AND ASTRONOMY

SEMINAR

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A tale of two clump masses a different approach to studying clump formation in simulations

Abstract

In the Milky Way now, star formation proceeds almost exclusively in Molecular Clouds (MCs) under 106 Msun. This is not necessarily true at higher redshifts. The CANDELS survey has shown us a fraction of galaxies host massive kpc-scale stellar clumps (Guo et. al 2015). This suggests that star formation may proceed in objects at least 100 times more massive than present day MCs. However, lensing source reconstruction, which has enhanced resolution, has shown us that star formation can still proceed in MC-scale objects at these redshifts (e.g. Johnson et al. 2017). A natural way to piece two opposing datasets together would be to turn to simulations of clump formation. However, this produces a similar dichotomy where both large (e.g. Inoue et al. 2016) and small (Tamburello et al. 2016, Behrendt et al. 2016) objects can be formed. With a wealth of conflicting observational and theoretical data, we find ourselves at a crossroad. We propose a new approach to studying clump formation in simulations. We seed clump formation events in isothermal simulations of galaxy disks. In this way, we can explore a large parameter space in both perturbation size and strength. We can find a space of likely clump masses for a given galaxy. We propose this method as a way to stitch together the wealth of data we now have.

Friday, October 27, 2017

3:00 p.m.

Elliott Building

Room 162