

PHYSICS AND ASTRONOMY SEMINAR (In person)

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“WISDOM Molecular cloud properties and star formation quenching”

Abstract

Molecular gas is the fuel for star formation in galaxies. Using observations from the mmWave Interferometric Survey of Dark Object Masses (WISDOM), that spatially resolve (1-30 pc) individual molecular clouds across the Hubble sequence, I will reveal a clear dependence of the nature of the molecular interstellar medium of galaxies on Hubble type, and present a simple diagnostic of cloud formation. In particular, I will highlight the shortcomings of the usual virial approach to clouds as self-gravitating objects, and stress the importance of the external galactic potential and in-plane shear to regulate the dynamical states of clouds. I also introduce a simple but powerful cloud-cloud collision formalism that accounts for the cloud properties seen in nearby as well as high redshift systems. Finally, I discuss the impact of these different mechanisms on the star formation efficiency of the clouds and thus the quenching of star formation, particularly in galaxy nuclei and spheroids (morphological quenching).

Tuesday, January 10, 2023

2:00pm

Elliott 162