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April 29, 2016

10:50am - 12:05pm

Main 1.220 (Brownsville)

ACSB 2.122 (Edinburg)

Title: The Universe's most extreme star-forming galaxies

Abstract:

Dusty star-forming galaxies host the most intense stellar nurseries in the Universe. Their unusual characteristics ( $\text{SFRs}=200\text{-}2000M_{\text{sun}}/\text{yr}$ ) pose a unique challenge for cosmological simulations and galaxy formation theory, particularly at early times. Although rare today, they were factors of 1000 times more prevalent at  $z\sim 2\text{-}5$ , contributing significantly to the buildup of the Universe's stellar mass and the formation of high-mass galaxies. However, an ongoing debate lingers as to their evolutionary origins at early times, whether or not they are triggered by major mergers of gas-rich disk galaxies, or if they are solitary galaxies continually fed pristine gas from the intergalactic medium. Observational evidence has been mixed over recent years; some studies clearly point to chaotic kinematic histories and fast gas depletion times ( $\sim < 100\text{Myr}$ ), while other work may demonstrate secular (though active) disks can sustain high star-formation rates over long periods of time. Similarly, some works argue such extreme star-formers contribute very little to cosmic star-formation, while others find quite the opposite. Furthermore, their presence in early protoclusters, only revealed quite recently, pose intriguing questions regarding the collapse of large scale structure. I will discuss some of the latest observational programs dedicated to understanding their origins and frequency at early times, their context in the cosmic web, and future long-term observing campaigns that will reveal their relationship to 'normal' galaxies, thus teaching us valuable lessons on the physical mechanisms of galaxy growth and the collapse of large scale structure in an evolving Universe.