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Presentation Requested: poster
Category: Assembly of Galaxies / Mass & Structure Evolution
Question: How do galaxies grow over time? How does its mass (stellar, gas and dark matter) and structure change over cosmic time? What can ALMA in conjunction with other telescopes tell us about the assembly of galaxy disks and spheroids?

Burst and Quench? The Life Story of Low Surface Brightness Galaxies

We present a first look at spatially resolved optical/infrared spectral energy distributions (SEDs) of low surface brightness disk galaxies. We have observed a sample of low surface brightness galaxies with the VIRUS-P integral field spectrograph and have combined those observations with archival Spitzer IRAC images to create SEDS. We present these SEDs in the context of different candidate star-formation histories.

This easily overlooked class of galaxy comprises up to half of the galaxy population with masses spanning that of the Milky Way, making them cosmologically significant baryon repositories. They are also very different from the more familiar archetypal galaxies in that they have unusually high gas fractions, up to 95

Our spatially resolved spectra give our analyses a significant advantage over those based on broad-band photometry, which have significant model degeneracies, and those based on whole-galaxy measurements, which average out distinct stellar populations. Additionally, because we analyze our optical spectra, which are sensitive to age indicators such as Lick Indicies and the 4000 angstrom break, in tandem with Spitzer IRAC photometry, which is a direct measurement of the integrated star-formation history, we are able to discriminate between candidate histories with greater confidence than earlier works.

We aim to use our analyses to characterize the star-formation histories of galaxies over a range of surface brightnesses near the low end of the observed continuum so that these galaxies can be appropriately placed in the larger context of galaxy formation over cosmic time.