Investigating the Life Cycle of Molecular Clouds in the Andromeda Galaxy

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Molecular clouds are the cradles of star formation, however the details of their life cycle are not well understood. We combine several astronomical data sets to investigate the life cycle of molecular clouds in M31. We are primarily using the Panchromatic Hubble Andromeda Treasury, which catalogued over 200 million stars, and a molecular cloud catalogue that is constructed from new high spatial/spectral resolution CARMA observations along with several ancillary data sets, taking advantage of the broad wavelength coverage. We classify each cloud in our sample as a star-forming cloud or a non-star forming cloud, based on the presence of any one of several star formation indicators.   After comparing the observations to the results from a Monte Carlo simulation, we are able to constrain the timescale for molecular clouds to dissipate.