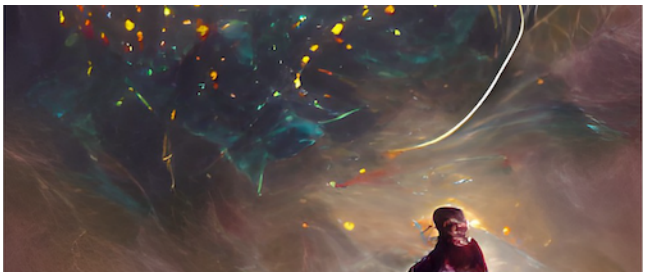

Contribution ID: **48** Type: **not specified**

Probing the Morphology-Density Relationship at z ~ 2.3 with MAMMOTH Protoclusters

Thursday, 10 March 2022 11:20 (20 minutes)

By analyzing the morphology, color, & distribution of cluster galaxies, we can study the evolution of protoclusters into clusters and determine how environment impacts the transformation of high-z star-forming galaxies into low-z red sequence galaxies. While many high-z red sequence galaxies are found in clusters/protoclusters out to z ~ 2, determining when the protocluster environment impacts morphology is an open question. We present an analysis of galaxies in three MAMMOTH protoclusters at z ~ 2.3. Using HST/WFC3 F160W imaging, we measure the morphology of H-alpha and Ly-alpha galaxies. By comparing the environment and fraction of galaxies with a Sersic index > 2 to the field, we determine if the protocluster environment impacts morphology at z ~ 2.3, or if the morphology-density relationship solidifies later. As we enter the JWST era, understanding the role of the protocluster environment in galaxy pre-processing is vital for completing the picture of cluster galaxy evolution.

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