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Presentation Requested: oral
Category: Assembly of Galaxies / Mass & Structure Evolution
Question: What have we learned or can we learn about galaxies at the Epoch of Reionization with ALMA / what are the synergies with other telescopes? What is the role of ALMA, JVLA and SKA (and other telescopes) for confirming galaxies where Lyman alpha is not detected (i.e. at putative z > 7.5)

Constraining the Lyman-alpha escape fraction with far-infrared observations of Lyman-alpha selected star-forming galaxies

We examine the far-infrared emission from 498 Lyman-Alpha Emitters (LAEs) at redshifts 2.8, 3.1, and 4.5 in the ECDFS. None of the LAEs are individually detected at 250, 350, 500, or 870 mum in HerMES and LESS data, so we use stacking to probe deeper – to $1\sigma \sim 0.1$ to 0.4 mJy. None of the samples are robustly detected in the stacks, although there is a 2.5σ signal at 870 mum for the $z = 2.8$ galaxies. We consider a range of far-infrared SEDs to derive upper limits on the far-infrared luminosities and star-formation rates, which are then combined with the Lyman-alpha and UV star-formation rates to measure lower limits on the Lyman-alpha escape fractions of 10 to 20% for these galaxies. If LAEs Lyman-alpha escape fractions follow the global evolution then they have warmer far-infrared SEDs than typical Sd galaxies. We discuss these results in terms of the prospects for ALMA to be able to detect galaxies such as these at a range of redshifts, and what information we will be able to learn from ALMA observations.