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Presentation Requested: oral
Category: Cosmic Star Formation History
Question: How does the star formation rate density evolve over all redshifts, especially at z > 2? Is there agreement between the measurements from ALMA, JVLA, Herschel, HST, and other instruments? Can the SFR density be dissected showing what is contributing to it at different redshifts or how might we go beyond measuring this relationship. What are the state of the art simulations and how do the observations compare to them?

ALMA Patchy Deep Survey A blind search for [CII] emitters at z$\sim$ 4.5

The cosmic star formation rate density at high-z is sensitive to galaxy formation models. However, the contribution from dusty star-forming galaxies is still uncertain at $z > 4$. The [CII]158mum is the brightest emission line at FIR and a good star-formation rate indicator for dusty galaxies. We will present an initial result of a blind search for [CII] emitters at $zsim4.5$ using ALMA archival data. We corrected extra-galactic data covering at 330-360 GHz (band 7) from eight Cycle 0 projects which have already published their results. The total number of pointings is 245 and the total on-source exposure time is 19.2 hours. In the continuum-subtracted data cubes with a spectral resolution of 300 km s^{-1}, we could not detect line emitter candidates above a 6-$sigma$ significance level. This result provides upper limits to the $zsim4.5$ [CII] luminosity function down to $L_{[CII]}sim2.5times10^{8}$ L_{odot} (or $SFRsim20$ M_{odot} yr^{-1}). Although these limits are still 2 orders of magnitude larger than the expected [CII] luminosity function from the UV-selected galaxies at the similar redshifts, we will be able to constrain the cosmic star-formation rate density by collecting archival data from hundreds of projects as ALMA Patchy Deep Survey.