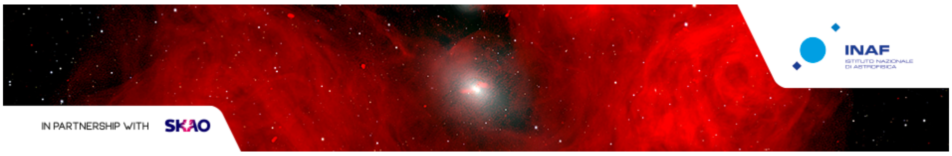

Contribution ID: **32** Type: **not specified**

The evolution of the □star-□□□ relation: a stacking-derived snapshot at z=0.4 with the MIGHTEE and CHILES survey

Wednesday, 29 November 2023 16:50 (20 minutes)

Thanks to MeerKat and the SKA-MID generation, HI is getting accessible at higher z, making it possible to explore galaxy scaling relations involving gas mass at z > 0. Probing the evolutionary path of such relations would allow to understand how cold hydrogen reservoirs impact star formation and galaxy evolution. Recent works exploiting stacking of the 21 cm line with the MIGHTEE survey datacubes, on the COSMOS field, have been unveiling the trends of the HI mass vs stellar mass and SFR at about z 0.4. However, scaling relations built via stacking are typically computed with few data points and would ideally need to be expanded at lower stellar mass to better constrain slope. Employing MIGHTEE HI observations on the COSMOS field in combination with 1000 hrs of VLA observations provided by the CHILES survey ensures a more robust statistics for stacking. We find that star forming galaxies at z≈0.37 are HI-richer with respect to the population at z≈0 and HI-poorer than at higher redshift. Moreover, we find that the tilt of the inferred M_*-MHI relation is remarkably compatible with scaling relations extracted at lower and higher redshift.
This supports the idea that galaxies undergo HI depletion with the same rate as a function of cosmic time irrespectively of stellar mass. Though affected by cosmic variance due to the limited sampled volume, we argue that neutral gas flow from surrounding circumgalactic medium might not depend on the stellar mass of the galaxy.

Reasearch area

HI galaxy science

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