Contribution ID: **368** Type: **Oral Presentation**

Star-forming galaxies and radio-active galactic nuclei in the faint radio sky

Thursday, 6 July 2023 09:40 (20 minutes)

Understanding the complex relationship between nuclear activity, star formation, and galaxy growth is crucial for disentangling the mechanisms driving galaxy evolution. This project investigates how nuclear activity regulates star formation and galaxy growth at higher redshifts (z > 1). We specifically explore the correlations between black hole accretion rate (BHAR), star formation rate (SFR), and stellar mass (M *) in both star-forming galaxies (SFGs) and host galaxies of radio active galactic nuclei (AGN). Utilizing MeerKAT International GHz Tiered Extragalactic Exploration (MIGHTEE) Early Science data from the COSMOS field, along with multiwavelength ancillary data, we aim to constrain the physical properties of SFGs and radio AGN host galaxies within a redshift range of 0 ⊠ z ⊠ 6. By analyzing the data, we determine the SFR, M * , and dust luminosity (L dust) for these sources using spectral energy distribution (SED) fitting techniques. To achieve this, we compare the results obtained from four SED fitting codes: MAGPHYS (da Cunha et al. 2008), CIGALE (Noll et al. 2009), AGNfitter (Calistro et al. 2016), and MrMoose (Drouart et al. 2018). The comparison is made against physical properties derived from independent measurements. The goal is to select the SED fitting code that yields physically feasible results and performs well for very faint radio sources. By utilizing MeerKAT observations, multiwavelength data, and SED fitting techniques, this project aims to analyze the physical properties and investigate the correlations between nuclear activity, star formation, and galaxy growth. The findings of this study will contribute to our understanding of the underlying physical mechanisms driving star formation and quenching across cosmic time.

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N/A

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N/A

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Yes, I ACCEPT

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Session Classification: Astrophysics & Space Science

Track Classification: Track D1 - Astrophysics