

The Third National Workshop on the SKA Project - The Italian Route to the SKAO Revolution



Contribution ID: 67

Type: **not specified**

Variation of the radio spectral slopes on and off the Main Sequence: new constraints on internal galaxies physical processes

Thursday, 7 October 2021 15:10 (20 minutes)

We present the results of a VLA pilot program to measure the radio slope in a sample of $z=2$ starforming galaxies from the COSMOS field. From the radio slope we will infer the relative fraction of thermal and non-thermal emission from young stellar populations, which can be directly related to the upper mass limit of the IMF. We probe the different galaxy evolutionary phases by selecting 20 main sequence objects (constituting our control sample) and 30 off-main sequence starbursts with specific star formation rate >4 times higher. We obtained 16 GHz VLA observations of the targets to complement existing VLA 1.4 GHz data at the same spatial resolution, providing an extended frequency range unaffected by free-free absorption to allow a robust determination of the radio slope. We show that the selected number of objects in each subsample (off and on main-sequence) is sufficient to fairly well estimate and soundly compare their median radio slopes. We interpret our findings as a potential evidence at high redshift for a non-universal high-mass end of the IMF.

Research area

Extragalactic Continuum (galaxies/AGN, galaxy clusters)

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Session Classification: Galaxy Evolution and AGN