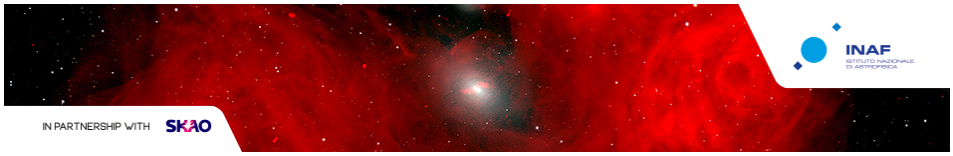

Contribution ID: **39** Type: **not specified**

The Far-Infrared/Radio Correlation in Strongly Lensed DSFGs: Insights into Galaxy and AGN Co-evolution

Thursday, 30 November 2023 12:10 (20 minutes)

Co-evolutionary models between supermassive black holes and their host galaxies predict that processes involved in the early stages of galaxy formation, such as nuclear activity and star formation, are closely related and coordinated in time. Dusty Star-Forming Galaxies (DSFGs) serve as ideal testing grounds for examining this scenario, as they constitute the bulk population at the peak of cosmic star formation and have been identified as the progenitors of massive quiescent early-type galaxies. In addition, strongly lensed DSFGs present a unique opportunity to explore regions within the luminosity/redshift space that would otherwise be beyond the reach of current instrumentation. This talk will investigate the interplay between nuclear activity and star formation by examining the far-infrared/radio correlation (FIRRC) within a sample of 28 sub-mm-selected, strongly lensed DSFGs at high redshift. Leveraging the magnification effect, we inferred a weak evolution of the FIRRC up to z~4, accompanied by a diminishing trend relative to radio power. These findings will be interpreted within theoretical frameworks of galaxy/AGN co-evolution. In particular, our targets will be compared with a sample of lensed quasars, where the trend of the FIRRC signifies a transition from an earlier phase of dust-obscured star formation to a later phase as radio-loud quasars. The SKA Observatory and its precursor instruments will have a significant impact on this investigation, particularly as they will play a pivotal role in expanding the samples of strongly lensed galaxies, even reaching back to the Epoch of Reionization.

Reasearch area

Extragalactic Continuum (galaxies/AGN, galaxy clusters)

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Session Classification: Parallel - Galaxy Evolution & AGN