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Marika Giuliatti - Synergistic Study of High-z Strongly Lensed Dusty Star-Forming Galaxies with ALMA: Insights into Galaxy/AGN Co-evolution

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Co-evolutionary models between supermassive black holes and their host galaxies predict that processes in the early stages of galaxy formation, such as nuclear activity and star formation, are strictly related and coordinated in time. Dusty star-forming galaxies (DSFGs) are ideal laboratories to test this scenario, as they constitute the bulk population at the peak of cosmic star formation, and they are identified as the progenitors of massive quiescent early-type galaxies. Gravitational lensing offers the unique opportunity to access the details of the physical properties, morphology, and interstellar medium content of these compact and obscured objects. In this talk, I will present the study of a sample of sub-mm-selected, high-redshift, strongly lensed DSFGs, highlighting the synergy between their radio and far-IR emission with ALMA archival data to investigate the interplay between nuclear activity and star formation. Finally, I will focus on a target among the sample showcasing a lack of clear optical/NIR emission for both the lens and the background source. ALMA high-resolution observations enabled the un-lensed morphology reconstruction of the background galaxy, resolving the compact (~ 500 pc) star-forming region and gas distribution (~ 1 kpc) from the [CII] and CO(8-7) spectral line emissions and shedding light on the evolutionary stage of this peculiar object.

Session Classification: Galaxies and AGNs