

AGN under the Eye of JWST: Insights into their high-z properties

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“In this talk, I will present key results on the selection of high-redshift AGN and their peculiar properties. Specifically, I will introduce three new narrow-line AGN diagnostic diagrams, leveraging the [OIII]4363 auroral line, which has been detected in several JWST spectra. These diagnostics effectively differentiate much of the AGN population from Star-Forming Galaxies (SFGs) and have proven capable of selecting AGN at $z > 6$, where traditional narrow-line AGN (NLAGN) diagnostic diagrams fail due to the different conditions of AGN host galaxies.

For the first time, I applied these new AGN diagnostics in the spectroscopic selection of NLAGN among the ~ 300 publicly available medium-resolution spectra of the CEERS survey, identifying 52 NLAGN up to $z \sim 9$. I conducted a detailed multiwavelength analysis of these sources, and I will present the main findings. Notably, given the availability of deep X-ray observations for this field, I investigated the X-ray properties of the selected NLAGN. I found that all but four NLAGN are undetected in the deep X-ray image, as well as all the high-redshift BLAGN previously selected in the literature from the same survey. Even stacking the undetected sources did not result in a detection, revealing an X-ray weakness of 1-2 dex compared to what is expected based on their bolometric luminosities.

Lastly, I will present results related to the radio analysis of ~ 20 broad-line AGN selected with JWST. Investigating the radio emission of these sources is crucial for distinguishing between the heavily obscured AGN scenario and intrinsic X-ray weakness as the cause of the observed X-ray deficiency in these sources.”

Presenter: MAZZOLARI, Giovanni