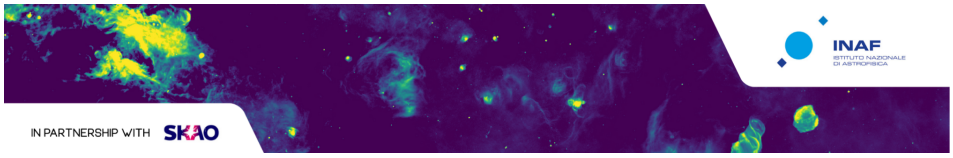

Contribution ID: **18** Type: **not specified**

Strongly Lensed Dual AGN Systems in the Era of SKA-VLBI

Tuesday 25 November 2025 14:51 (3 minutes)

As an intermediate stage of the merging process, we expect to observe pairs of Active Galactic Nuclei (AGN), in particular at high$-z$ when the mergers were most frequent. Nevertheless, to date there is only one confirmed AGN pair at high redshift ($z = 2.1$) clearly hosted by a galaxy merger, with a projected separation of 3.8 kpc. The critical population to really test galaxy (and SMBH) evolution models is that of low-separation (hundreds of pc) AGN pairs, as they trace the final stages of mergers, and they are the progenitors of the loudest sources of gravitational waves (GWs) in the nHz regime. These systems at high$-z$ can be spatially resolved only with very long baseline interferometry (VLBI) observations.

By combining the magnifying power of strong gravitational lensing, VLBI and archival X-ray observations, we have likely detected the first example of a close pair of jetted AGN at $z > 3$ (separated by 175 pc in projection). This dual AGN candidate is strongly gravitationally lensed, which gives us the opportunity to put observational constraints on the statistics of dual AGN systems at high redshift.
Also, the timescales on which multiple SMBHs can coalesce are not known, but it is expected to be short given the low detection rate of such systems. Therefore, observations of small separation dual AGN are needed in order to directly probe the (unknown) timescales of the final stages of the merging process.

In this poster, we will show the results of a sensitive multi-band and multi-scale follow-up of the lensed dual AGN candidate MG B2016+112. This dataset and the intrinsic μJy-level flux density of the source anticipate what SKA surveys and SKA-VLBI follow-up observations will reveal at the largest distances and at the highest angular resolution.

Topics

Galaxy Evolution & AGN

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Session Classification: Flash talks