

Connecting the fine structure of jets with the complex geometry of lobes in radio galaxies: a 144 MHz to 9 GHz, multi-scale radio journey in RBS 797

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A variety of radio sources have so far questioned the idea that AGN-driven jets are always stable, straight, linear outflows. A significant challenge in understanding how jets can change their orientation over time is related to the vast range of spatial scales involved, spanning from a few pc to tens of kpc. To illustrate the importance of high-resolution and sensitive observations for resolving these diverse scales, I will present our new investigation of the central radio galaxy in the RBS797 cluster. We conducted a comprehensive study of its multiple jet activities in different directions, employing multi-frequency (144 MHz - 9 GHz) and multi-scale (5 pc to 50 kpc) observations performed with JVLA, LOFAR (including international stations), e-Merlin, VLBA, and EVN. These deep and recent observations allowed us to spatially resolve the morphology, spectral features, and radiative age of the radio galaxy's components, namely its four perpendicular lobes, the precessing jets with multiple hotspots, and the heart of the radio core on pc scales. Our study underlines the critical need for high resolution observations that are also sensitive to large scale, diffuse radio emission (such as the LOFAR data with international stations, or the JVLA data), which will be provided by the SKA telescope. This is required to connect the fine structure of the jets in radio galaxies with the complex geometry of their large lobes.

keywords

AGN, radio galaxies, sub-arcsecond resolution, multifrequency, multiscale analysis

In-person or online?

in-person

Career level

ECR

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