

The Power of Relativistic Jets: A Comparative Study

Monday 2 September 2024 09:28 (1 minute)

We present the results of a comparison between different methods to estimate the power of relativistic jets from active galactic nuclei (AGN). We selected a sample of 32 objects (21 flat-spectrum radio quasars, 7 BL Lacertae objects, 2 misaligned AGN, and 2 changing-look AGN) from the very large baseline array (VLBA) observations at 43-GHz of the Boston University blazar program. We then calculated the total, radiative, and kinetic jet power from both radio and high-energy gamma-ray observations, and compared the values. We found an excellent agreement between the radiative power calculated by using the Blandford and Königl model with 37 or 43 GHz data and the values derived from the high-energy γ -ray luminosity. The agreement is still acceptable if 15 GHz data are used, although with a larger dispersion, but it improves if we use a constant fraction of the γ -ray luminosity. We found a good agreement also for the kinetic power calculated with the Blandford and Königl model with 15 GHz data and the value from the extended radio emission. We also propose some easy-to-use equations to estimate the jet power.

Reference: Foschini et al., 2024, *Universe* **10**, 156.

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Session Classification: Poster hang