The Jet Collimation Profile of 3C273

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Abstract: The process of jet collimation in radio galaxies and quasars has been a topic of theoretical and observational study for decades, and the narrow opening angles of such jets frequently seen on large scales place severe constraints on mechanisms. Recent work has indicated that the Bondi radius at around $10^5 R_s$ may be an important transition region beyond which active collimation gives way to a unconfined high Mach number flow. In this paper we discuss high resolution multi-wavelength VLBI imagery of the powerful quasar 3C273, yielding collimation profile data over ~2.5 decades of distance from the core, from $10^{15}$ to $10^{17} R_s$. The results are compared to similar data for the low-power radio galaxy M87, and are discussed in the context of different models for active collimation inside the Bondi radius.

3C273 Jet Width Measurements

Conclusions

- Evidence is accumulating that collimation is related to generic properties of circum-BH material inside the Bondi radius
- Polarimetry and RM gradients can yield essential clues
- Sensitive new VLBI observations at 3mm and 1.3mm will soon provide powerful new constraints on these questions