

Zooming in the jet formation site in AGN with RadioAstron

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During the past five years, RadioAstron Nearby AGN Key Science Program team has carried out multiple space-VLBI imaging experiments on nearby radio galaxies M87, 3C84 and Cen A with an aim to study the structure of their jet formation sites. The obtained images significantly exceed the resolution achieved in ground-based experiments revealing new details of the jet formation site and of the interplay between the jet and the ambient medium. For example, in 3C84 we have detected a surprisingly wide edge-brightened jet merely a few hundred gravitational radii from the central engine, a "mini-cocoon" around the recently restarted parsec-scale jet, and high brightness temperatures that are at or above the inverse Compton catastrophe limit. Furthermore, we have been able to resolve the internal structure of the jet acceleration and collimation zone in M87. I will give an overview of the main results from the key science program and also briefly discuss an ultra-high resolution campaign, in which we observed two quasars over the whole RadioAstron orbit yielding detections down to a fringe spacing of 12 microarcseconds.