

Space VLBI Observations of 3C279 at 1.6 and 5 GHz

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We present VLBI Space Observatory Programme (VSOP) observations of the gamma-ray blazar 3C279 at 1.6 and 5 GHz made with the HALCA satellite and the VLBA. The quasar core and a secondary component 3 milliarcseconds away dominate the compact radio emission, with synchrotron self-absorption in the core resulting in the jet component appearing brighter at 1.6 GHz. The 1.6 GHz image also shows complex emission from a jet extending to the southwest. A spectral index map was made by combining the VSOP 1.6 GHz image with a matched-resolution ground-baseline only 5 GHz image from the VSOP observation on the following day. The spectral index map shows the core to have a highly inverted spectrum consistent with compact self-absorbed synchrotron emission. Model fits to the VSOP visibilities reveal high brightness temperatures ($> 10^{12}$) that cannot be measured with ground-only arrays.