Imaging, modelfitting and source structure corrections for the K-band (24 GHz) Celestial Reference Frame

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Abstract

The K-band VLBA celestial reference frame program has so far provided high-resolution VLBI images for more than 730 AGN sources at up to 87 epochs. A detailed analysis of the images has allowed us to determine several quantities that provide useful indicators of the quality of each image and the suitability of each source as a calibrator or reference source. In addition, modelfitting has allowed us to determine for each image the angular size and radial extent of the core and second brightest component and the position angle between them as well as estimates of the overall extent and direction of the source structure. While VLBI images of CRF sources show that in general they appear more core-dominated at K-band (24 GHz) than at X-band (8.4 GHz), they can still exhibit measurable extended emission at K-band. We started a project to apply structure corrections directly to the data during the analysis process using updated models of the source structure. This is possible because of readily available VLBI images from our dedicated K-band CRF observing campaigns to map and monitor the source structure. We will present an overview of our image analysis and plans to investigate the impact of source structure using all available K-band CRF sources.

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