

Towards high-performance mm-VLBI science operations with multi-band receivers

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Area della Ricerca CNR

Book of Abstracts

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Welcome

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Tech working group review

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Expanding the Global mm-VLBI Array with Multi-Band Receivers

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Tri-band maser studies of star-forming regions

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Tracking Binary SMBH Orbits Using Global K/Q/W Simultaneous VLBI: Test Observations with KVN and Yebes-40m

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Proposal of Observing 183 GHz Water Megamasers with VLBI: Scientific motivation and Feasibility

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DARKER: a science case to shed light on dark matter and dark energy with the tri-band receivers

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Tri-band receivers for INAF radio telescopes: first light

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KVN Update

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Current status and future developments of receivers at NAOJ's VLBI facilities

In this presentation I will review current status of receivers at VLBI stations in Japan, including the frequency bands, bandwidths, and potential for multi-frequency receiving capability. I will focus primarily on VLBI facilities operated by the National Astronomical Observatory of Japan (NAOJ), such as the VERA network and the Nobeyama 45m radio telescope, while also briefly introducing the status of radio telescopes at universities and other institutions. In addition, I will introduce on-going developments of new receivers, including new 86 GHz receivers for VERA and their potential capability for future multi-frequency observations, and a wideband C-band receiver for VERA, as well as planned 1-mm receiver for the Nobeyama 45m telescope.

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Exploring weak targets with simultaneous multi-band observations and an update of the triple band receiver for Tianma-65m and CVN

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Development of multi-band receiving systems in the Nobeyama 45 m telescope and its perspective

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The Yebes 40 m radio telescope multi frequency system at K-, Q- and W-bands

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Developing FPT/SFPR capabilities for APEX and Effelsberg telescopes

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Global VLBI in the era of the African Millimeter Telescope

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Study and Design of 18GHz Wideband Analog Optical Link and Fiber Transfer Delay Measurement System for millimeter-wave VLBI INAF antennas

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Discussion session 1: Technology

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VHE (CTAO) science review

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Neutrino astrophysics in the era of KM3NeT

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EVN observations of the high-frequency methanol masers

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Sub-pc scale mm molecular clouds associated with the torus of NGC 1052

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Multifrequency VLBI detection of supermassive black hole binaries at millimeter wavelengths

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The Supermassive Black Hole Binary Candidate 3C 66A

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Sardinia radio telescope status and challenges

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Multi-frequency enabling at the stations of Medicina and Noto

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Discussion on INAF Activities

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Multi-frequency Gaussian modeling of AGN jets with the extended Korean VLBI Network

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Multimessenger study of neutrino-candidate blazar PKS 0735+178 using Korean VLBI Network multi-band observations

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Discussion session 2: Science

Chairs: A. Lobanov, T. Venturi

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Discussion session 3: Management and Baseline definitions

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Acceleration and Collimation Zone (ACZ) of the NGC 4261 Jet: A Scaled-down Counterpart to M 87?

In this report, we present our recent study of the acceleration and collimation of the two-sided jets in the nearby low-luminosity AGN NGC 4261. We robustly identify a parabolic-to-conical structural transition in both the jet and counterjet, with the transition occurring on (sub)parsec scales. Based on the jet-to-counterjet brightness, we derive the jet velocity field at distances of $\sim (10^3 - 10^4)$ Rs. Although local kinematic variations are present, the jet shows an overall acceleration to relativistic speeds within the parabolic jet region. These results support the existence of a (sub)parsec-scale (≈ 1.5 pc) ACZ in NGC 4261. A brief comparison with M 87 suggests that the ACZ in NGC 4261 may represent a scaled-down analogue of that in M 87. We prospect that future (sub)mm-VLBI observations with multi-band receivers will be crucial to explore jet launching regions and their connection to ACZs.

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Is PKS 1540–077 a Compact Symmetric Object or a SMBH Pair?

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