

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

## **Report of Contributions**

Contribution ID: **28**

Type: **not specified**

# Welcome

*Tuesday 28 October 2025 09:00 (10 minutes)*

Contribution ID: 29

Type: **not specified**

## Science working group review

*Tuesday 28 October 2025 09:10 (30 minutes)*

**Presenter:** LOBANOV, Andrei

Contribution ID: **30**

Type: **not specified**

## Tech working group review

*Tuesday 28 October 2025 14:00 (30 minutes)*

**Presenter:** ROTTMANN, Helge

Contribution ID: **31**

Type: **not specified**

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

*Tuesday 28 October 2025 09:40 (20 minutes)*

**Presenter:** ROS, Eduardo (MPI für Radioastronomie)

Contribution ID: 32

Type: **Contributed Talk**

## **Tri-band maser studies of star-forming regions**

*Tuesday 28 October 2025 10:00 (20 minutes)*

**Presenter:** Dr RYGL, Kazi (Istituto Nazionale di Astrofisica (INAF))

Contribution ID: 33

Type: **Contributed Talk**

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

*Tuesday 28 October 2025 10:20 (20 minutes)*

**Presenter:** RO, Hyunwook (Korea Astronomy and Space Science Institute)

Contribution ID: 34

Type: **Contributed Talk**

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

*Tuesday 28 October 2025 11:10 (20 minutes)*

**Presenter:** Prof. HAGIWARA, Yoshiaki (Toyo University)



Contribution ID: 35

Type: **Contributed Talk**

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

*Tuesday 28 October 2025 11:30 (20 minutes)*

**Presenter:** SPINGOLA, Cristiana (INAF - Istituto di Radioastronomia)

Contribution ID: 36

Type: **Invited Talk**

# Tri-band receivers for INAF radio telescopes: first light

*Tuesday 28 October 2025 14:30 (25 minutes)*

**Presenter:** BOLLI, Pietro (Istituto Nazionale di Astrofisica (INAF))

Contribution ID: 37

Type: **Invited Talk**

## KVN Update

*Tuesday 28 October 2025 14:55 (25 minutes)*

**Presenter:** JUNG, Taehyun

Contribution ID: 38

Type: **Invited Talk**

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

*Wednesday 29 October 2025 09:00 (25 minutes)*

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 ongoing 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.

**Presenter:** HONMA, Mareki

Contribution ID: 39

Type: **not specified**

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

*Tuesday 28 October 2025 15:20 (15 minutes)*

**Presenter:** JIANG, Wu (Shanghai Astronomical Observatory, CAS)

Contribution ID: 40

Type: **Invited Talk**

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

*Wednesday 29 October 2025 09:25 (15 minutes)*

**Presenter:** IMAI, Hiroshi (Kagoshima University)

Contribution ID: 41

Type: **Invited Talk**

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

*Tuesday 28 October 2025 16:05 (15 minutes)*

**Presenter:** DE VICENTE, Pablo (Observatorio de Yebes - IGN)

Contribution ID: 42

Type: **Invited Talk**

## **Developing FPT/SFPR capabilities for APEX and Effelsberg telescopes**

*Tuesday 28 October 2025 16:20 (15 minutes)*

**Presenter:** ZHAO, Guang-Yao (MPI für Radioastronomie)



Contribution ID: 43

Type: **Invited Talk**

## **Tri-band receiver for Onsala Space Observatory**

*Tuesday 28 October 2025 16:35 (15 minutes)*

**Presenter:** LINDQVIST, Michael (Chalmers)

Contribution ID: 44

Type: **not specified**

## **Metsähovi Radio Observatory Triple-Band Receiver project**

*Tuesday 28 October 2025 16:50 (15 minutes)*

**Presenter:** SAVOLAINEN, Tuomas (Metsähovi Radio Observatory)

Contribution ID: 45

Type: **Contributed Talk**

# **The Development Progress of the K/Q/W Triple-Band Cryogenic Receiver for the Tianma Telescope**

*Tuesday 28 October 2025 17:05 (15 minutes)*

**Presenter:** ZHONG, Weiye (Shanghai Astronomical Observatory, CAS)

Contribution ID: 46

Type: **Invited Talk**

## **Prospects for sub-mm astrometry with the updated Event Horizon Telescope**

*Wednesday 29 October 2025 15:15 (20 minutes)*

**Presenter:** DODSON, Richard (ICRAR)

Contribution ID: 47

Type: **Contributed Talk**

# Global VLBI in the era of the African Millimeter Telescope

*Wednesday 29 October 2025 09:40 (20 minutes)*

**Presenter:** CHIBUEZE, James (University of South Africa)

Contribution ID: 48

Type: **Contributed Talk**

# **Development of Radio Astronomy Infrastructure in Thailand: The Thai National Radio Telescope and Beyond**

*Wednesday 29 October 2025 10:00 (20 minutes)*

**Presenter:** PIMPANUWAT, Bannawit (National Astronomical Research Institute of Thailand)

Contribution ID: 49

Type: **Contributed Talk**

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

*Wednesday 29 October 2025 10:20 (20 minutes)*

**Presenter:** NANNI, Jacopo (Università di Bologna, associato Istituto Nazionale di Astrofisica (INAF))

Contribution ID: 50

Type: **not specified**

## Discussion session 1: Technology

*Wednesday 29 October 2025 11:10 (1h 20m)*

Chairs: M. Rioja, B. W. Sohn



Contribution ID: 51

Type: **Invited Talk**

## **VHE (CTAO) science review**

*Wednesday 29 October 2025 14:00 (25 minutes)*

**Presenter:** ZANIN, Roberta (Istituto Nazionale di Astrofisica (INAF))

Contribution ID: 52

Type: **Invited Talk**

## GW science review

*Wednesday 29 October 2025 14:25 (25 minutes)*

**Presenter:** COLOMBO, Alberto (Istituto Nazionale di Astrofisica (INAF))

Contribution ID: 53

Type: **Invited Talk**

## Neutrino astrophysics in the era of KM3NeT

*Wednesday 29 October 2025 14:50 (25 minutes)*

**Presenter:** ILLUMINATI, Giulia (INFN Bologna)

Contribution ID: 54

Type: **Contributed Talk**

## **EVN observations of the high-frequency methanol masers**

*Tuesday 28 October 2025 11:50 (20 minutes)*

**Presenter:** MOSCADELLI, Luca (Istituto Nazionale di Astrofisica (INAF))

Contribution ID: 55

Type: **Contributed Talk**

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

*Thursday 30 October 2025 11:00 (20 minutes)*

**Presenter:** SAWADA-SATOH, Satoko (Osaka Metropolitan University)

Contribution ID: 56

Type: **Contributed Talk**

## **Multifrequency VLBI detection of supermassive black hole binaries at millimeter wavelengths**

*Wednesday 29 October 2025 16:40 (20 minutes)*

**Presenter:** ZHAO, Shan-Shan (Shanghai Astronomical Observatory)

Contribution ID: 57

Type: **Contributed Talk**

# **The Supermassive Black Hole Binary Candidate 3C 66A**

*Tuesday 28 October 2025 12:10 (20 minutes)*

**Presenter:** THEVENET, Paloma (Observatoire de Paris - PSL)

Contribution ID: 58

Type: **Contributed Talk**

## **Sardinia radio telescope status and challenges**

*Thursday 30 October 2025 09:00 (25 minutes)*

**Presenter:** POPPI, Sergio (Istituto Nazionale di Astrofisica (INAF))



Contribution ID: 59

Type: **Contributed Talk**

## **Multi-frequency enabling at the stations of Medicina and Noto**

*Thursday 30 October 2025 09:25 (25 minutes)*

**Presenter:** ORLATI, Andrea (Istituto Nazionale di Astrofisica (INAF))

Contribution ID: **60**

Type: **not specified**

## Discussion on INAF Activities

*Thursday 30 October 2025 09:50 (40 minutes)*

Chairs: F. Govoni, C. Trigilio

Contribution ID: 61

Type: **Contributed Talk**

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

*Wednesday 29 October 2025 16:00 (20 minutes)*

**Presenter:** JEONG, Hyeon-Woo (University of Science and Technology, Korea (UST) / Korea Astronomy and Space Science Institute, Korea (KASI))

Contribution ID: 62

Type: **Contributed Talk**

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

*Wednesday 29 October 2025 16:20 (20 minutes)*

**Presenter:** Dr KIM, Sanghyun (Korea Astronomy and Space Science Institute (KASI))

Contribution ID: **63**

Type: **not specified**

## Discussion session 2: Science

*Thursday 30 October 2025 11:20 (1h 20m)*

Chairs: A. Lobanov, T. Venturi

Contribution ID: 64

Type: **not specified**

## **Discussion session 3: Management and Baseline definitions**

*Thursday 30 October 2025 14:10 (1h 30m)*

chairs: J. Conway, E. Ros

Contribution ID: 66

Type: **Contributed Talk**

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

*Wednesday 29 October 2025 17:00 (20 minutes)*

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 ( $\sim 1.5$  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.

**Presenter:** YAN, Xi (Xinjiang Astronomical Observatory(XAO), CAS)

Contribution ID: 67

Type: **not specified**

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

*Wednesday 29 October 2025 17:20 (20 minutes)*

**Presenter:** CHENG, Xiaopeng (Korea Astronomy and Space Science Institute)