ISSUE

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January 2026

EVN/JIVE Newsletter

IN THIS ISSUE

Welcome to the January 2026 issue of the EVN/JIVE Newsletter.

Dear EVN Newsletter readers,

First of all, I would like to wish everyone every success in this new year, 2026. May you benefit as much as possible from our cooperation within the EVN and enjoy many exciting new discoveries.

As usual, this newsletter provides a wealth of important and interesting information on the scientific and technical activities carried out within the network. The Science Highlights section features several significant research results. In this issue, you can read about VLBI measurements of pulsar PSR B1133+16 scintillations and the advantages this approach offers over single-antenna measurements. Another major achievement is the study of the structure of quasar 3C 279, performed using space VLBI techniques as part of the RadioAstron project. Furthermore, an important step toward unravelling the mystery of dark matter has been taken with the discovery of a black hole with a mass of 1.13 solar masses, identified through the analysis of gravitational lensing. Finally, new spectral observations of the OH Megamaser IRAS 15250+3609 have allowed researchers to observe a dwarf galaxy merging with a host galaxy.

The newsletter also contains essential information about current changes and events within the EVN. You can learn about new members who have joined our community, activities in various projects and technical groups, as well as upcoming meetings. Among these, I would like to draw special attention to the 17th European VLBI Network Symposium and Users' Meeting, which will be held at the Jodrell Bank Centre for Astrophysics, University of Manchester, United Kingdom.

Finally, I highly recommend reading the very interesting interview with both the former and new EVN Programme Committee Chairs.

Dear readers, I hope you find this newsletter as engaging as previous issues. Once again, I wish you all every success in the coming year.

Krzysztof Katarzyński
EVN Consortium
Board of Directors Chair

CALL FOR PROPOSALS

Observing proposals are invited for the European VLBI Network (EVN). Deadline: 1 February 2026, 16:00:00 UTC. The EVN facility is open to all astronomers, but currently restrictions apply to teams with PIs and/or co-Is with affiliation to institutes in Russia and Belarus. Astronomers with limited or no VLBI experience are particularly encouraged to apply for observing time. Student proposals are judged favourably. Support with proposal preparation, scheduling, correlation, data reduction and analysis can be requested from the Joint Institute for VLBI ERIC (JIVE). Check details of the call for proposals here.

SCIENCE HIGHLIGHTS

1

Arecibo-VLA Visibility Secondary Cross-Spectra

Scintillation properties of PSR B1133+16 measured with Very Long Baseline Interferometry

Ashley Stock

Scattering in the interstellar medium creates multiple images of radio sources that can interfere to cause interstellar scintillation. PSR B1133+16, a bright radio pulsar, has been shown to scintillate due to at least five distinct structures in the interstellar medium. Each of these structures produce a parabolic arc in the power spectra of the pulsar. Using the EVN, we measured the distance, velocity, and orientation of three of these structures to high precision. This is the first VLBI measurement of the scintillation screens of a pulsar with multiple parabolic scintillation arcs. [Read more](#).

2
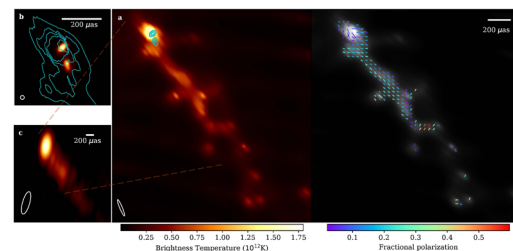
Revisiting 3C 279 jet morphology with space VLBI at 26 microarcsecond resolution

Teresa Toscano

This work presents ultra-high resolution observations of the blazar 3C 279 at 22 GHz using the RadioAstron space-VLBI mission, achieving an angular resolution of around 26 µas. It shows reconstructions of both total intensity and linear polarization images via the RML method eht-imaging, detecting ground-space fringes to baselines of ~8 Gλ, and finding that the electric vector position angles align closely with the jet direction — consistent with a predominantly toroidal magnetic field. The observed brightness temperature estimate of ~$1.6{\times}10^{12}$ K for the core region suggests near equipartition and a magnetic field strength of ~0.2 G. [Read more](#).

3

A million-solar mass dark object detected at cosmological distance

John McKean
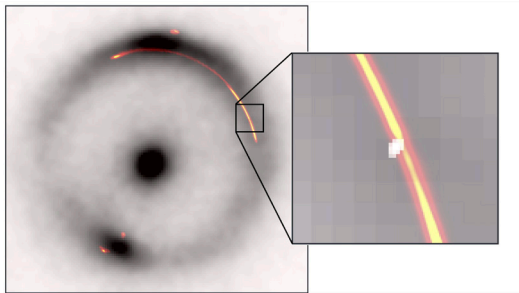
We believe that galaxies form hierarchically via a process of mergers. Central to this theory is the need for dark matter, which itself merges to form haloes where the first stars are formed. Based on several observational studies of the large-scale properties of our Universe, it is thought that dark matter is cold, collisionless, and is the dominant form of matter. Read more.

4
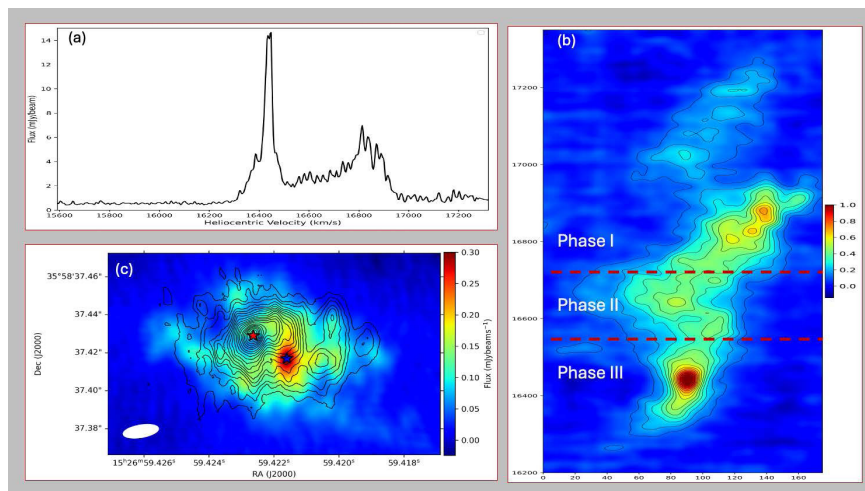
IRAS15250+3609: Minor Merger revealed as an OH MegaMaser

Antneh Tegegne

High-resolution EVN-MERLIN continuum and spectral-line observations of the OH MegaMaser in the nuclear region of ULIRG IRAS 15250 +3609 have been conducted for the study of the nature and structure of the OH MegaMaser emission. The OH Megamaser emission is found to be superposed on and confined within the nuclear source of the nearly edge-on host galaxy having an AGN and an extended starburst region with a size of 130 by 95 pc. Read more.

PORTRAITS

In this section, we will meet new colleagues joining the EVN — and occasionally spotlight long-standing staff. Recently, several new scientists have joined JIVE. They introduce themselves below.

Miriam Nyamai
EVN Support Scientist

I study energetic stellar events, such as thermonuclear eruptions and black hole X-ray binary transients, across multiple wavelengths, with a particular focus on radio observations. I was born in Kenya and received my bachelor's degree from Kenyatta University, followed by a PhD in astronomy from the University of Cape Town. Before joining JIVE, I worked with the MeerKAT telescope as an Operations and Commissioning Scientist, using it for my research. Although my previous experience was with compact radio arrays, I have recently started working with Very Long Baseline Interferometry (VLBI) to combine well-sampled radio light curves of transients with high-resolution imaging.

Florian Eppel
EVN Support Scientist

I recently joined JIVE as an EVN Support Scientist. Previously, I was a PhD researcher at the University of Würzburg, where I focused on VLBI studies of blazars—particularly TeV-emitting and neutrino-candidate AGN—as well as on multiwavelength observations of fast radio bursts. I also contribute to the TELAMON blazar monitoring program, run at Effelsberg. I am excited to use the EVN's high sensitivity to probe faint blazars and better understand their high-energy emission. I also look forward to exploring future high-resolution opportunities with upcoming arrays such as the ngVLA, SKA, and potential new European stations, as well as supporting users with their EVN projects.

Mislav Baloković
CRAF Assistant Spectrum Manager

I am a professional astrophysicist and recently transitioned into spectrum management as the assistant spectrum manager for the Committee on Radio Astronomy Frequencies (CRAF) at JIVE. I have been an amateur astronomer since high school and enjoy sharing the excitement of astronomy with the general public. Caring deeply for the preservation of astronomy for future generations in the face of exciting new technologies, I am shifting my career from research into science- and technology-related policy. With previous expertise in radiative transfer calculations and satellite dynamics, I now focus on spectrum management pertaining to large satellite constellations.

Suggestions for future Portraits may be sent to communications@jive.eu.

OTHER NEWS

JIVE VLBI School 2025

by Benito Marcote

After a 25-year hiatus, the JIVE Very Long Baseline Interferometry School (JVS) returned from 15 to 19 September 2025, offering an intensive, week-long introduction to VLBI and EVN data reduction. Organised by JIVE in collaboration with the University of Pretoria and supported by the ACME project, the school was delivered in a hybrid format, with hubs at JIVE, the University of Pretoria, and Budapest, as well as significant online participation.

The JVS attracted a diverse group of participants, primarily early-career astronomers alongside some experienced researchers. This edition marked the fourth official JIVE VLBI School, following the earlier editions held until 1999, and represented an evolution from the previous CASA-VLBI workshops, expanding the scope of the programme.

The school placed a strong emphasis on practical learning, offering hands-on data reduction and VLBI tutorials in small groups led by dedicated tutors. A total of 197 participants

JVS Hungarian node
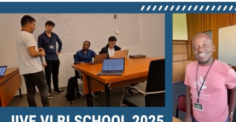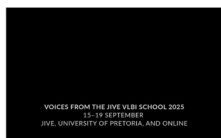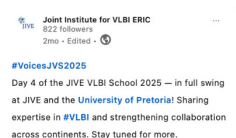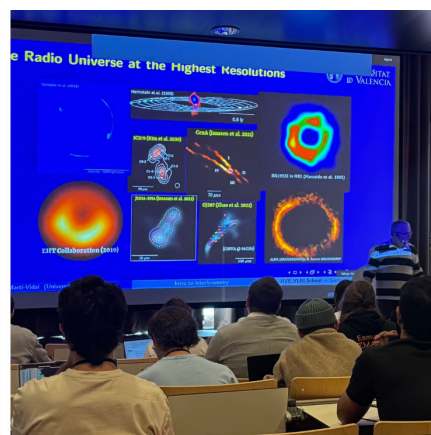
from 52 countries registered, including undergraduate and MSc students, postdocs, and senior staff, creating a diverse and international group.

For the first time, attendees had the opportunity to witness the full VLBI data workflow in real time, including data acquisition during live e-EVN observations. This was complemented by in-person and streamed guided tours of the JIVE correlator and the Hartebeesthoek and Westerbork antennas. Participants then analysed the data collected during these observations.

Feedback was overwhelmingly positive, with lectures rated 4.5/5 and tutorials rated 4.1/5. Participants particularly valued the small-group format and the active engagement of the tutors. However, some suggested that longer and more focused sessions, along with more in-depth lectures on calibration and flagging, would have been beneficial. Throughout the week, lightning talks provided perspectives on multi-wavelength research and the current state of VLBI, while streamed tours of JIVE's correlator and the Hartebeesthoek station enhanced the immersive experience for participants.

The JVS was well documented through photos, videos, and participant testimonials, showcasing the rich exchange of knowledge and collaboration that took place during the school. Click here or on the collage to view them all.

Looking ahead, future editions will aim to broaden their geographic reach and inclusivity through additional multi-hub hybrid formats, reduce expertise barriers by incorporating more pipeline-based workflows, and strengthen connections between VLBI and multi-wavelength/multi-messenger astrophysics.

15-19 September 2025
JIVE VLBI SCHOOL
Learn the Very Long Baseline Interferometry (VLBI) technique and data reduction from experts.

JIVE (main venue)
University of Pretoria (auxiliary venue)
Online mode (lectures and chat interaction)

Info at
jive.eu/jvs2025

By Benito Marcote

Photo: F. Colomer's LinkedIn

By Marjolein Verkouter
Photo: Paolo Soletta, INAF–OAC

EVN seminars showcase research

Yebes 50th Anniversary

Technical collaboration for unique VLBI science

EVN online seminars showcase the scientific impact of VLBI across diverse topics. In late 2025, presentations on Arp 299 and active galactic nuclei attracted over 90 live participants. With more than 8,000 YouTube views overall, the seminars provide lasting value and will continue with new topics in 2026. Read the full article.

On October 27, 2025, the Yebes Observatory in Spain, a leader in radio astronomy, geodesy, and geophysics, celebrated its 50th anniversary. This milestone was especially significant for our community, as Yebes is the Spanish node of the EVN and Spain is a full JIVE member. To the next 50 years!

The joint EVN Technical Operations Group and 6th GMVA Technical Group meeting took place on 4–5 September 2025 at INAF–OAC and the Sardinia Radio Telescope, with 42 registered participants. In-person discussions regarding technical collaboration are essential for enabling the exceptional science delivered by the individual telescopes of both networks. Read the full article.

PRIDE successfully tracks JUICE during its Venus gravity assist

by Giuseppe Cimò

The Joint Institute for VLBI ERIC coordinated an EVN campaign to observe the JUICE spacecraft during its recent flyby of Venus. Observations using the Planetary Radio Interferometry and Doppler Experiment (PRIDE) allowed the detection of high-accuracy data essential for refining the spacecraft's state vector and improving planetary ephemerides.
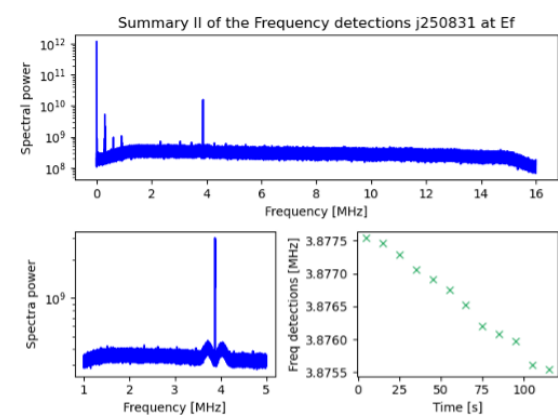
On August 31, 2025, the ESA JUICE spacecraft executed a gravity assist manoeuvre around Venus. This event provided a critical opportunity for the PRIDE team to conduct VLBI observations in preparation for the mission's science phase in the Jupiter system. The primary scientific objective was the refinement of the Venus planetary ephemerides and the validation of the PRIDE techniques for the future characterisation of the Jovian moons.

Artistic representation of JUICE approaching Venus. **Image:** ESA

Initial detection of JUICE frequency by Effelsberg.
Image: PRIDE team

The European VLBI Network tracked the spacecraft carrier signal. The participating stations included Effelsberg (Germany), Hartebeesthoek (South Africa), Irbene (Latvia), Onsala (Sweden), Tianma (China), Torun (Poland), and Yebes (Spain).

We have completed the initial processing of the Doppler tracking data. The analysis confirms the successful detection of the carrier signal with high accuracy. The plot shows the frequency detection at the Effelsberg radio telescope. Correlation of the VLBI data is currently in progress at JIVE. The combination of the VLBI lateral positions with the radial velocity derived from Doppler data will help improve the determination of the spacecraft state vector and the ephemerides of Venus. Stay tuned!
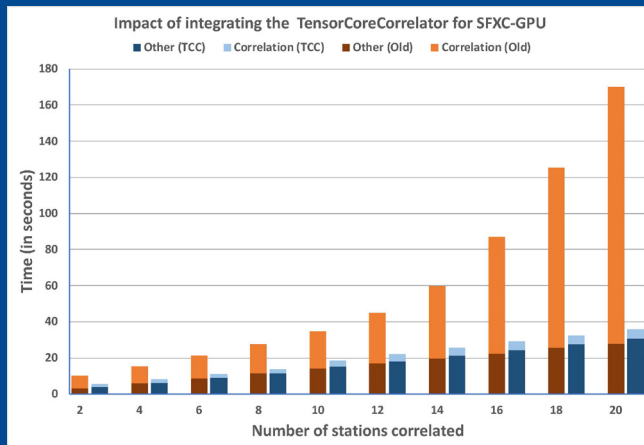
Radioblocks
updates

by Mark Kettenis

This article summarises the progress made over the past nine months in developing a prototype VLBI correlator within the Radioblocks project that runs entirely on GPU hardware with Tensor Cores. It is based on the presentation given by the author at the IVTW held last October in Sweden. The author is a software project scientist at JIVE and a Radioblocks researcher.

After a few years of intensive development, the Radioblocks VLBI correlator application reached an important breakthrough. Recently, JIVE produced GPU (Graphics Processing Unit) kernels—one type of the reusable "blocks" created within the project—that implement the full algorithm of the existing CPU-based Super FX Correlator (sfxc), which is used for all European VLBI Network (EVN) correlations and observing modes. These kernels include the accurate fractional delay compensation and the windowed-overlap filter which EVN users have come to rely on for their science cases.

The current VLBI GPU kernels integrate the extremely efficient Tensor-Core Correlator (TCC) written by John Romein (ASTRON) and deliver excellent scalability: the computational cost scales almost linearly with the number of stations and the bandwidth that needs to be correlated, at least up to 32 stations, as illustrated in the figure.

Impact of integrating the TensorCoreCorrelator for SFXC-GPU

The figure illustrates how the computational cost is divided between per-station preprocessing and correlation, comparing performance before and after the integration of the Tensor-Core Correlator.
Image: JIVE Radioblocks team

One goal of Radioblocks is to explore different GPU accelerator cards by providing them to project partners for benchmarking. These include several of NVIDIA's latest "Blackwell" generation GPUs. Measurements by JIVE, using the TCC-powered sfxc-gpu version, show that these devices are at least ten times more energy efficient than the existing CPU-based correlator. This represents a major step toward making EVN correlator operations more sustainable.

Radioblocks funded a GPU server for JIVE, hosting four NVIDIA "Blackwell" generation workstation GPUs. This enables JIVE staff to work on integrating a GPU-based correlator with the EVN FlexBuff-based storage cluster. Preliminary performance measurements suggest that this single GPU server can fully replace the current 42-node, 840-core CPU cluster while doubling the amount of bandwidth that can be processed.

However, it should be noted that turning this TRL3/4 system into an efficient, operational correlator requires several software developments, not just in the GPU code but also for components outside the correlator "block", few of which are within the scope of Radioblocks.

FROM THE STATION

International users learn to use JIVE's software correlator at the first SFXC Workshop

The start of a SFXC user community, already looking ahead to the next meeting

By Marjolein Verkouter, JIVE Head of Technical Operations and R&D and organiser of the SFXC Workshop

From 21 to 23 September 2025, JIVE hosted the first SFXC Workshop, welcoming eleven prospective users from radio-astronomical institutes around the world, including participants from China and South Africa. The workshop was aimed at scientists and engineers interested in using the Super FX Correlator (SFXC) for Very Long Baseline Interferometry (VLBI), developed and maintained at JIVE and offering a range of advanced science-enabling features.

The participants of the SFXC workshop. **Photo:** Ioanna Kazakou (JIVE)

"Very interesting and very helpful. We use the Distributed FX software correlator (DiFX), but never before SFXC. Getting familiar with it is very useful: it has some scripts that allow you to do a lot of new science. Using it looks easy to me", commented Shaoguang Guo, Senior Engineer at the Shanghai Astronomical Observatory.

Until now, SFXC's advanced capabilities have mainly been used by JIVE for the European VLBI Network (EVN), as well as by a small number of external teams and individual users working closely with JIVE staff. One of the main goals of the workshop was therefore to make it easier for interested users to install and operate their own SFXC systems independently.

This was useful not only for new users, but also for experienced ones, as noted by long-time SFXC user Franz Kirsten, Senior Research En-

gineer at Onsala Space Observatory: "Although I used SFXC for years, I've now clarified a few things that were not fully clear to me before."
The workshop programme combined short theoretical lectures in the mornings with extensive hands-on sessions in the afternoons. Most of the time was spent helping participants get their own systems up and running. By working on the same test datasets and problems, interaction between participants was naturally encouraged — marking the start of a broader SFXC user community.

Since 2014, SFXC has been the production correlator for the EVN in all observing modes, including real-time VLBI. Over time, the development team has implemented several unique capabilities, such as coherent de-dispersion, a phased-array mode, and PSRFITS output. These build on SFXC's state-of-the-art delay compensation algorithm, which allows extremely high frequency resolution correlation with minimal loss of signal to noise. Without those features, the scientific information carried in the weak celestial signals or the tiny frequency shifts seen in spacecraft tracking experiments would be lost.

Javier Gonzalez-Garcia, Support Engineer for VLBI at Yebes Observatory, explained his motivation for attending: "We are using DiFX for geodetic applications, and now we can compare and discover new applications that can be done with SFXC."
"Its flexibility makes it very suitable for specific science cases", added Franz Kirsten.

In addition to invited external expert users and instructors — Jack Radcliffe (University of Manchester), Omar Ould-Boukattine (University of Amsterdam), and Franz Kirsten — JIVE engineers Aard Keimpema, Mark Kettenis, and Marjolein Verkouter presented overviews of the wider SFXC ecosystem. Topics included post-correlation data inspection and conversion of correlator output to standardised data formats such as CASA Measurement Set, FITS-IDI, and the geodetic MkIV format.

The final session, "Future bells & whistles", looked ahead to ongoing and future developments. Promising progress towards a full implementation of the SFXC algorithm on GPUs was presented, currently being developed within the EC-funded Radioblocks project. Opportunities for processing future SKA-VLBI data were also discussed.
Feedback from participants was overwhelmingly positive. As Shaoguang Guo summarised: "The in-person communication was very helpful. Keep that workshop going — maybe every two years."

The post-workshop evaluations were unanimous on this point too, with participants agreeing that two days were too short to fully explore such a powerful and complex system. JIVE greatly enjoyed organising the workshop and working closely with users, and both organisers and participants are already looking forward to the next SFXC Workshop.

Passing the baton: a conversation with the previous and new EVN PC Chairs

Q & A

This edition of our newsletter followed the transition for the EVN Programme Committee (PC). As **Zsolt Paragi** concluded his term as Chair (since 1 August 2022) and **Jack Radcliffe** stepped into the role, they share their thoughts on recent developments within the EVN and what lies ahead.

Over the years, the PC has undergone significant changes — from evolving observing policies and the array itself to the growing complexity of coordinating observations and proposals. Both Zsolt and Jack bring extensive experience, not only as scientists but also as community builders shaping the direction of VLBI research across the EVN and beyond.

Q1. You both have multidimensional careers and hold responsible positions. Could you briefly introduce yourselves and tell our readers a bit about your professional journey and connection to the EVN?

Zsolt Paragi: I first came to Dwingeloo in 1996/97 for a student exchange program, where I spent a year studying VLBI. Since 2002, I have formally been at JIVE in various roles: initially supporting EVN operations, then helping with the transition to real-time e-VLBI, later becoming Head of User Support, and, since 2021, serving as EVN PC Chair.

My scientific interests include high-redshift active galactic nuclei (especially dual/binary

Jack Radcliffe: I started in 2014 with my first project in astronomy, which involved wide-field VLBI with the EVN — a task that is challenging for students, advisers, VLBI arrays, and correlators alike! This project spanned Manchester, Groningen, and Dwingeloo (via ASTRON). Since then, I have continued my advisers' tradition of pushing the correlator towards larger VLBI surveys, fostering ongoing collaborations with JIVE and other VLBI-focused institutions.

My research has mainly focused on AGN surveys, star formation–AGN feedback, and more technically oriented areas such as VLBI pipelines, commensal surveys, and new calibration algorithms. I have also explored variability, FRBs, and protoplanetary disks. I was based at the University of Pretoria, where I helped develop the VLBI research group with Roger Deane and John McKean; it is now well established. I have participated in various VLBI training schools across Europe, both creating and delivering tutorials through

AGN) and various types of transients. I have conducted EVN/e-VLBI research on classical transients and coordinated the initial developments to detect short transients at JIVE, which led to the localisation of fast radio bursts on milliarcsecond scales with the EVN. I initiated the efforts in the EVN community to follow up electromagnetic counterparts to gravitational wave events, which led to the VLBI detection of the afterglow from the first known neutron star–neutron star merger. I continue to support multimessenger astronomy, serving as a main coordinator within the EC-funded ACME project.

Q2. Zsolt, looking back, what do you consider the main changes from your time as Chair — both in the way the PC operates and in how the EVN has evolved as a network?

ZP: The EVN PC plays a role in developing the EVN policies, but ultimately, major decisions are made at the Consortium Board of Directors (CBD) level. However, we have introduced several important changes to the workings of the EVN PC, which were necessary to handle the increasing number of proposals in recent years. Examples of EVN policies where we made a significant impact include kick-starting the EVN-Lite network to support out-of-session transient science (although there is still work to be done), securing Sardinia Radio Telescope support for Target of Opportunity requests, and incorporating the uGMRT and MeerKAT in the network. The most recent changes...

ERIS and JIVE/CASA VLBI schools. Additionally, I have contributed to the African VLBI initiative through Development in Africa with Radio Astronomy, where I coordinate the VLBI data reduction segment.

Most recently, I have been involved in integrating the EVN with the SKA Observatory and African partners as co-chair of the VLBI science working group. In parallel, I have been exploring geodetic (including VLBI) capabilities across Africa through the GGOS-Africa project.

Q3. Jack, as you take over, how do you plan to build on what has been achieved in the past term? What do you see as the main priorities and challenges for the PC in the coming years?

JR: It's quite a challenge to follow the remarkable work Zsolt has done over the past few years, to be honest! I believe one of the main priorities for the EVN CBD, alongside the PC and TOG, will be to ensure the EVN meets expectations...

UPCOMING EVENTS

ACME Research Infrastructures Forum

Milan, Italy, from 19 to 20 January 2026. For more information, click here.

European ALMA school at Leiden Observatory

Leiden, the Netherlands, from 26 to 30 January 2026. For more information, click here.

SKA: An observatory for the entire community

Meudon, France, from 19 to 21 May 2026. For more information, click here.

ASTRON/JIVE Summer Research Programme

Dwingeloo, the Netherlands, starting in the third week of June 2026. Application deadline: 31 January 2026, 23:59:59 CET. For more information, click here.

The 17th European VLBI Network Symposium and Users' Meeting

Jodrell Bank Centre for Astrophysics (University of Manchester, UK), 14–18 September 2026. Registration and abstract submission open on 27 January 2026. For more information, click here.

Get in touch

EVN/JIVE newsletter editorial team

Agnieszka Slowikowska (JIVE Director)

Zsolt Paragi (JIVE Head of User Support)

Ioanna Kazakou (JIVE Communications Officer)

Our email

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