

# NEWSLETTER



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JIVE

Joint Institute for VLBI  
ERIC

## CALL FOR PROPOSALS - JUNE 2020

**DEADLINE: 01 JUNE 2020, 23:59:59 UTC**

## STATUS OF EVN OBSERVATORIES DURING COVID-19

The coronavirus outbreak continues to have a strong impact worldwide. Several EVN member countries have imposed diverse restrictions that affect EVN and JIVE operations. The primary goal is to ensure the health and safety of all the staff.

Observations of EVN Session 1 could be completed before such restrictions. Also, real-time e-EVN observations continue, since many telescopes can be operated remotely. JIVE staff are working from home, maintaining as much as possible all activities: processing the data of the EVN sessions, online support of users, and development of scientific and technical projects.

At this moment, the EVN Session 2 is scheduled for May 28 – June 18 2020 and preparations are progressing well.

Some activities are however necessarily affected: many events and visits are cancelled. The workshop on communication for the EVN is being held remotely, as well as the special sessions on VLBI at EAS. The EVN Symposium is postponed till the summer of 2021. Also URSI is postponed till 2021. At present, preparations continue for some important events, such as the CASA-VLBI workshop, which will be adjusted as needed.

More information: <http://www.jive.eu/corona-virus-and-jive-operations>

Status of the EVN: [https://deki.mpifr-bonn.mpg.de/Working\\_Groups/EVN\\_TOG/Observatory\\_Status](https://deki.mpifr-bonn.mpg.de/Working_Groups/EVN_TOG/Observatory_Status)



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WELCOME



Rafael Bachiller, Chairman of the European VLBI Network Consortium Board of Directors

Paco Colomer, Director of the Joint Institute for VLBI-ERIC

We wish that all our friends, colleagues and families are in good health, while we hope that the difficult conditions we are living continue to evolve favourably. The pandemic is imposing severe challenges all across the globe, and the EVN and JIVE are trying to accommodate the circumstances of lockdown in some countries, remote operations of some telescopes, and home working.

Thanks to the efforts of the staff and to the robustness of the remote operations at several EVN stations, the operations of the network go on, although at a reduced level (see enclosed note). The EVN Call for Proposals keeps its deadline on June 1st, for observations in Session 3 (Oct 15 – Nov 5 2020) and beyond.

Most of EVN users are now working remotely and, taking advantage of the extraordinary spatial resolution and quality of the data previously acquired with our network, they continue to obtain excellent science results. Some of these results are highlighted in this Newsletter, as well as several network and technological developments.

The EVN webpage now includes an improved explanation on how to schedule regular EVN observations, encouraging the use of the pySCHED tool that takes advantage of sophisticated Python utilities and simplifies the scheduling, being especially useful for new EVN users.

Moreover, to facilitate the transition of data processing from AIPS to CASA, a workshop is being organized at JIVE in November. Stay tuned!

# CALL FOR PROPOSALS

**DEADLINE: 01 JUNE 2020, 23:59:59 UTC**

Details of the call: <https://www.evlbi.org/call-proposals>



*The European VLBI Network. Image by Paul Boven (boven@jive.eu). Satellite image: Blue Marble Next Generation, courtesy of Nasa Visible Earth (visibleearth.nasa.gov).*

Observing proposals are invited for the European VLBI Network (EVN). The EVN facility is open to all astronomers. Astronomers with limited or no VLBI experience are particularly encouraged to apply for observing time. Student proposals are judged favorably.

Support with proposal preparation, scheduling, correlation, data reduction and analysis can be requested from the [Joint Institute for VLBI ERIC \(JIVE\)](#).

The EVN is a Very Long Baseline Interferometry (VLBI) network of radio telescopes operated by an international consortium of institutes. It is located primarily in Europe and Asia, with additional antennas in South Africa and Puerto Rico. The EVN provides very high

sensitivity images at angular scales of (sub-) milliarcseconds in the radio domain. EVN proposals may also request joint e-MERLIN and EVN observations for an improved uv-coverage at short spacings, significantly increasing the largest detectable angular size to arcsecond scales. Further improvement of the uv-coverage may be achieved in global VLBI observations when the EVN observes jointly with NRAO/GBO telescopes or with the Long Baseline Array.

EVN observations may be conducted with disk recording (standard) or in real-time correlation (e-VLBI), which guarantees a rapid turnaround. Standard EVN observations are available at wavelengths of 92, 50, 30, 21/18, 13, 6, 5, 3.6, 1.3 and 0.7 cm.

e-VLBI observations can be performed at 21/18, 6, 5, and 1.3 cm. e-MERLIN can be combined with the EVN in both standard and e-VLBI observations. Global observations are performed only with standard observations. Every year standard EVN observations occur during three sessions of approximately 21 days each and ten separate days are available for e-VLBI observations.

More information regarding the EVN capabilities, availabilities of EVN antennas, observing sessions, proposal guidelines, and user support can be found at [www.evlbi.org](http://www.evlbi.org).

#### *e-VLBI observations (real-time correlation)*

e-VLBI experiments are carried out in 10 days spread over the year, outside of the regular EVN sessions. The correlation is done real-time, and the data are delivered to the proposers rapidly, which may be an advantage for rapid response science or science with temporal constraints (e.g., transients, astrometry). Also projects that can justify the need for rapid data delivery, e.g., student projects, are eligible.

e-VLBI projects are centrally scheduled (using inputs from the PI) because several projects may be observed in a single session. This advanced user support makes e-VLBI ideal for less experienced users. Note that some observing modes, such as multi-phase centre observing and multi-pass correlation are not available in e-VLBI. Please contact the [JIVE User Support](#) if you are planning a non-standard observing mode.

The request for e-VLBI should be clearly justified in the proposal and, if multi-epoch e-VLBI is requested, proposals should also indicate the range of temporal cadence the proposal could sustain.

Successful proposals with an e-VLBI component submitted by the June 1 deadline will be considered for scheduling on the e-VLBI days starting from September 2020. e-VLBI days are limited to a single observing frequency which will be based on the highest graded proposal. The e-VLBI schedule (including the

frequency and the participating antennas) can be modified up to 08:00 UT on the day before the e-VLBI run starts.

For more information (e.g., updates, available e-VLBI array) consult the 'operational modes' section on <http://www.evlbi.org/capabilities>.

#### *Integration of e-MERLIN Telescopes into the EVN*

Integrated e-MERLIN + EVN observations are now available using up to 5 e-MERLIN outstations at 512 Mbps; in addition to the selected Jodrell Bank Observatory (JBO) home station. This additional capability provides short-spacing coverage between 11 and 220 km within e-MERLIN, together with intermediate and long baselines between e-MERLIN and EVN antennas in both disk-recording and e-VLBI mode. Principal Investigators (PIs) can request 5 multiple e-MERLIN outstation antennas (all, or a subset of Pi, Da, Kn, De, Cm) in addition to an EVN homestation antenna at JBO (Jb1 or Jb2).

It is essential that e-MERLIN+EVN proposals provide clear scientific/technical justification for the inclusion of e-MERLIN outstation telescopes, including why e-MERLIN outstation antennas are required for the delivery of the scientific goal. This is because in addition to EVN PC approval, the e-MERLIN outstation contribution has to be approved by the e-MERLIN Time Allocation Group (TAG). For e-MERLIN TAG approved projects e-MERLIN outstation data will then be available for full correlation with other EVN antennas at JIVE.

Note that EVN proposals requesting only Jb1 or Jb2 are still considered as standard EVN proposals and will only require approval by the EVN PC.

More information can be found in the [EVN Call for Proposals](#).

## SCIENCE HIGHLIGHTS

# THE COSMIC COW EXPLAINED - RADIO SIGNALS POINT TO AN EXPLOSION AND A NEWBORN MAGNETAR

*Tao An, SHAO*



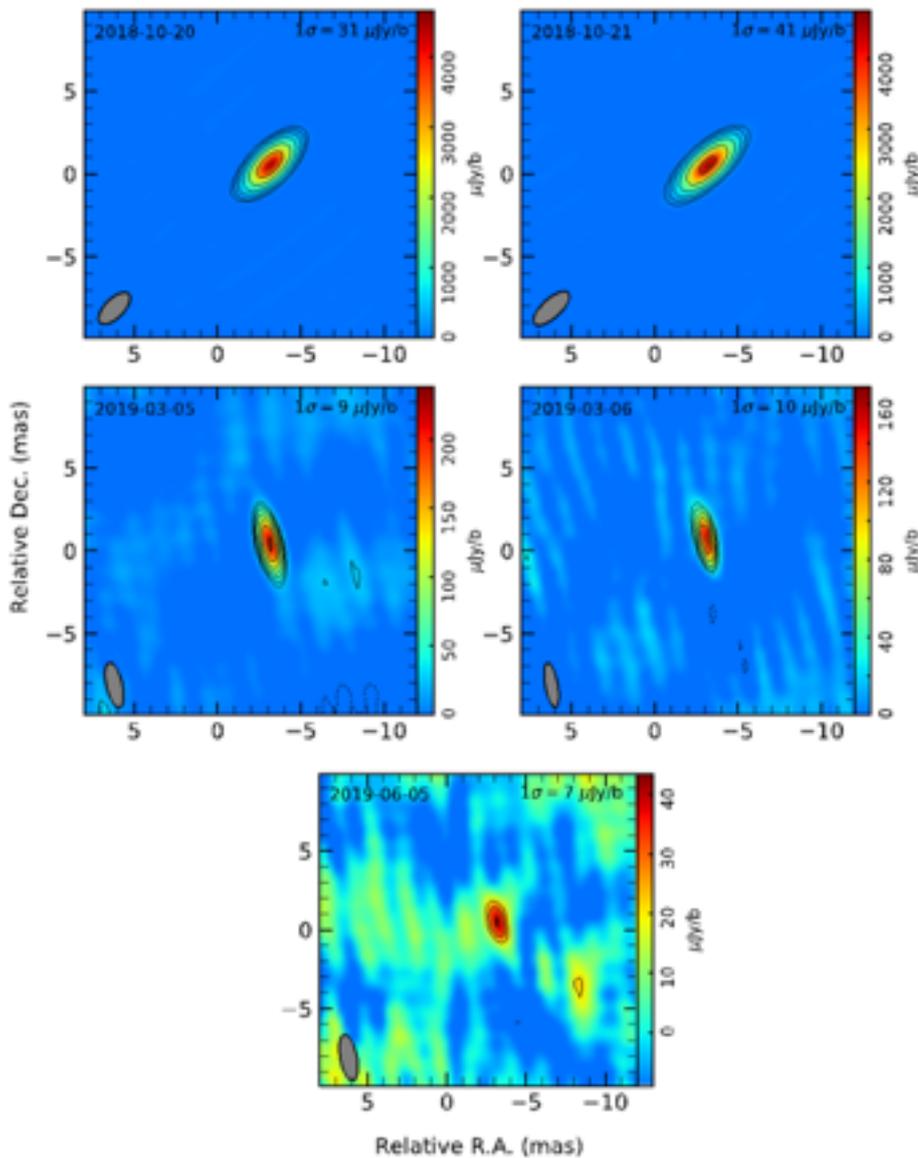
*Image: Artist's impression of the cosmic cow. Credit: Mohan, An, Yang, 2020, ApJL, 888, L24*

Among short-lived sky phenomena, AT2018cow (The Cow) is an astronomical event like no other. First detected in 2018, it received its memorable name based on alphabetical protocol to classify such events. However, it was not just its name that makes it memorable. AT2018cow was identified in a relatively nearby galaxy (about 200 million lightyears away) and the brightest fast-rising blue optical transient (FBOT). The proximity of AT2018cow, exceptionally brief brightness and unusually high temperature

led to widespread attention upon discovery. Accretion onto the central compact object (neutron star or black hole) can produce a relativistic jet which if pointed towards us can appear extremely bright, possibly responsible for the observed brightness in the Cow. Observations using 21 telescopes of the European VLBI Network (EVN) reveal the compact radio afterglow emission from AT2018cow. The study spans five observation sessions spanning about 1 year after the discovery, capturing the afterglow evolution

during the transition and later phases ( $\sim 90$  days and later). The source remains unresolved at all epochs, and shows no detectable variation of the emission peak position within the timespan of  $\sim 1$  year. A tidal-disruption-event or a regular core-collapse Supernova seem less possible due to the steep late-stage decline. A collimated relativistic jet is absent (proper motion  $< 0.14$  c) thus suggesting an intrinsically luminous ejecta. This, an expansion into a dense magnetized environment and late-time flux density evolution of the afterglow, is indicative of a newly formed magnetar driven central engine produced in the successful

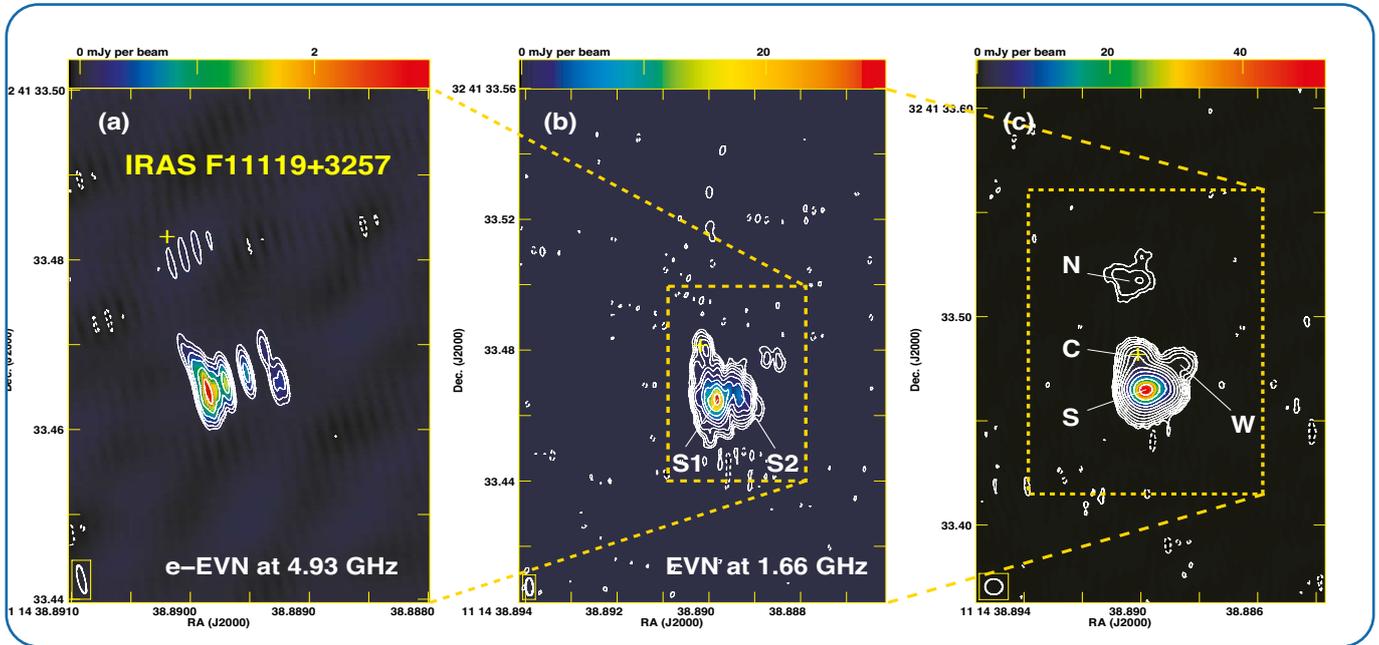
explosion of a relatively low-mass star (few – ten solar masses). This interestingly entails a possible future inference of fast radio bursts (FRBs) from the magnetar interaction with the strongly magnetized environment. The EVN is the most sensitive standalone VLBI network in the world that has delivered cutting-edge results in the field of transient science. It has by now provided the most accurate localisations of two FRBs. There is an intriguing possibility that there may be a link between FRBs and other types of transient sources (like the event that produced AT2018cow, an FBOT).



High resolution 5 GHz EVN images of AT2018cow indicating an unresolved radio structure (Figure 1 from Mohan, An, Yang, 2020, ApJL, 888, L24). The monitoring lasts several months and shows a fading trend of the source with time.

# A JET SPEED RECORD IN SUPERCRITICAL ACCRETION SYSTEMS

Jun Yang, Onsala Space Observatory,  
Chalmers University of Technology, Sweden



The two-sided but significantly beamed jet observed in the highly accreting quasar IRAS F11119+3257. The yellow cross marks the optical centroid. The clean beams are plotted in the bottom-left corners. The contours in all the images start at 3 sigma level and increase by factors of  $-1, 1, 2, 4, \dots$

The EVN observations have recently revealed a two-sided jet with an intrinsic speed of at least half of the light speed in the optically luminous quasar IRAS F11119+3257. This speed represents a new record in the systems of supermassive black holes accreting mass at a rate very close to or above the Eddington limit.

In the X-ray and optical regimes, highly accreting quasars are quite luminous. While, most of them are radio quiet and have optically thin radio spectra. Currently, there are only a few objects studied by the VLBI observations and it is still an open question whether there are relativistic jets in these supercritical accretion systems. IRAS F11119+325 is one of such quasars.

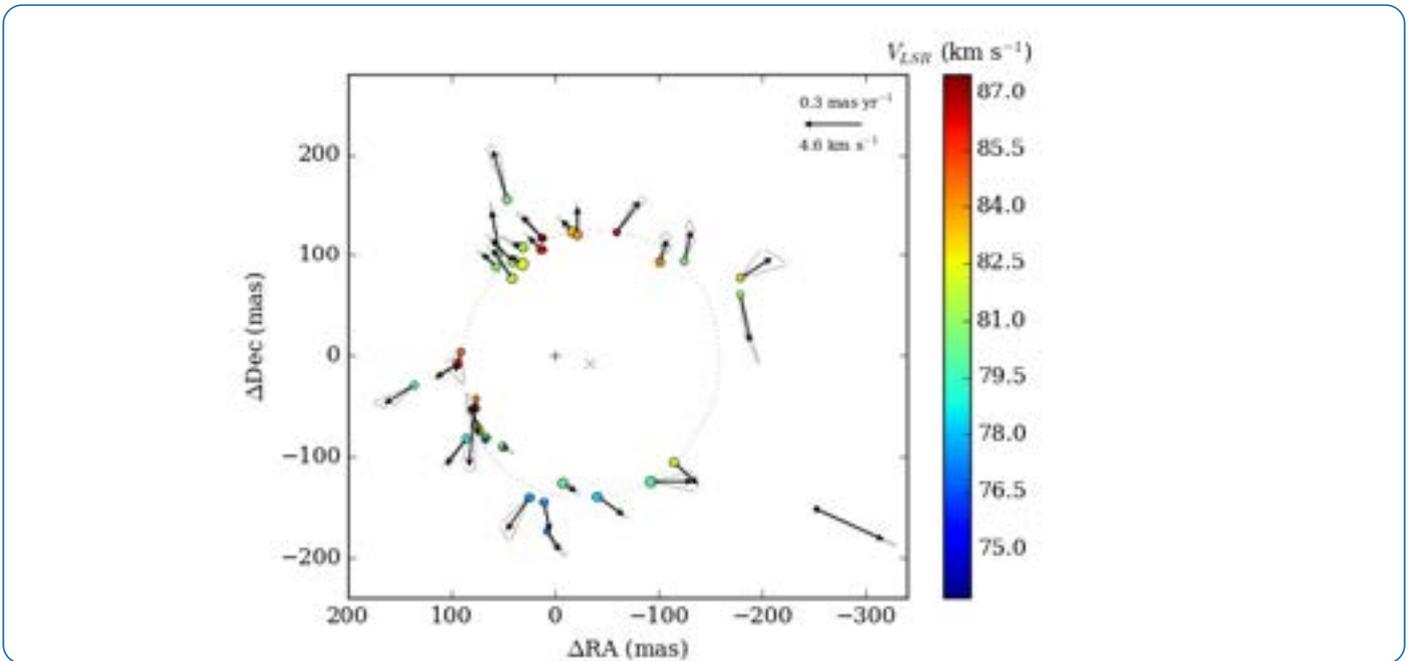
The X-ray spectroscopic observations of the quasar show extremely powerful wide-aperture outflows, i.e. accretion disk winds, likely driven by radiation pressure.

The EVN images in the attached Figure display a two-sided jet with a projected separation about two hundred parsec and a very high flux density ratio of about 290 between the approaching and receding jet components. Together with the accurate measurement of the integrated spectral index, the asymmetric jet is inferred to have an intrinsic speed at least 0.57 c. This is a new speed record among all kinds of (super) Eddington accretion sources. Moreover, compared to young radio sources with two-sided jets, the jet has the smallest viewing angle.

Published in: [Yang et al., 2000, MNRAS, 494, 1744](#)

# EXPANSION OF THE METHANOL MASER RING

Anna Barkiewicz, Nicolaus Copernicus University, Poland



*Widespread, almost circular symmetric 6.7 GHz methanol masers in the G23.657-00.127 high-mass star forming region. They are marked by filled circles with colours corresponding to the local standard velocity scale presented in the vertical wedge. The black arrows indicate the best fits of the relative proper motion for the three epoch data as measured relative to the centre of motion marked by the plus sign. The dotted ellipse traces the best flux-weighted fit to all cloudlets (except the SW blue-shifted one). The centre of the ellipse is marked by the cross.*

Methanol masers are widely used to study high-mass star formations, in particular to discover the kinematics of the close environment of newly born high-mass stars. The EVN plays a role in cosmic maser studies due to its sensitivity and high angular resolution. In 2004, using eight antennas, we discovered the ring-like methanol maser structure at the 6.7 GHz transition towards G23.657-00.127 (named after the Galactic coordinates) (Bartkiewicz et al. A&A, 2005, 442, L61).

The question then became what the origin could be of this special morphology. Searches for a H II region and water masers did not bring any detections. Non-thermal tracers at high angular resolution have not been

available to put constraints on the high-mass protostar.

After almost 9 and 11 years, we followed the same source using nine EVN antennas. Good quality data allowed us to identify proper motions of single maser cloudlets; they expand mainly in the radial direction (Fig.1) with a mean velocity of 0.21 milliarcsecond per year. That corresponds to 3.2 km/s for a distance of 3.19 kpc. Detailed studies led us to consider two possible scenarios where the methanol masers trace either a spherical outflow arising from an (almost) edge-on disc, or a wide angle wind at the base of a protostellar jet (Fig. 2).

One can notice that the almost circular structure (radius is 405 AU) shows two gaps

(emission free region) along the direction at position angle about 80 deg. This region might mark the mid-plane of a circumstellar disc, and the masers would expand above and below this plane. Considering the fact that elongated near-IR emission was reported by De Buizer et al. (ApJ, 2012, 754, 149) and it is consistent with the orientation of this emission-free region, we can also think about a possibility of an underlying jet, inclined with respect to the line of sight.

The central star would still lie at the centre of the methanol maser ring, but the masers would now be expanding at each side of the jet axis, and would trace a wide angle wind at the base of the protostellar jet. Masers would be tracing a combination of rotation around and expansion along the jet axis, similarly to what was observed in the maser source G23.01-0.41 (Sanna et al. A&A, 2010, 517, A78).

From monitoring the G23.657-00.127 using the 32 m Torun antenna over 20 year, we know that the target remains constant (Szymczak et al. MNRAS, 2018). However, the EVN

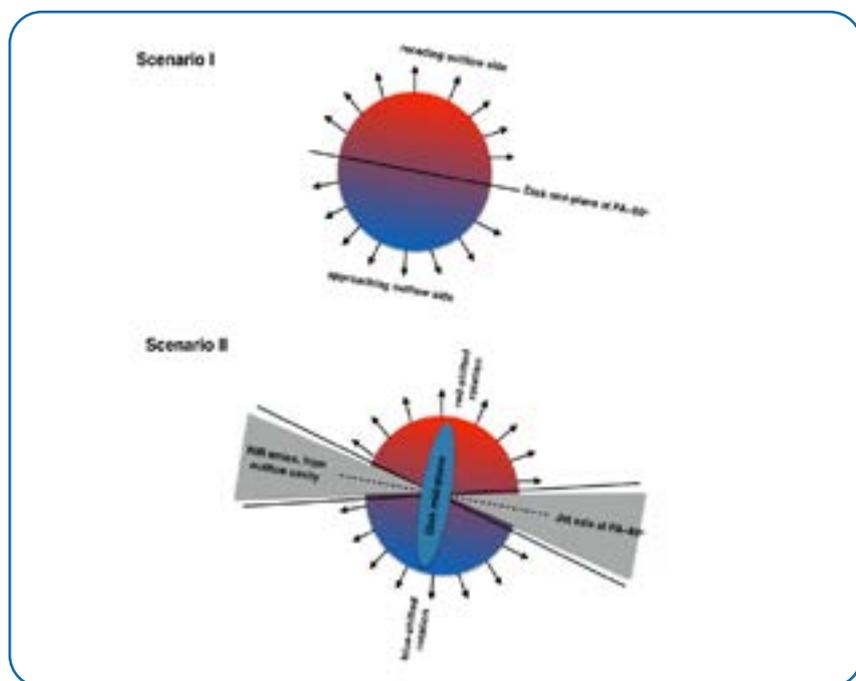
observations revealed significant changes in the intensity of individual cloudlets over the whole emission range. That allowed us to estimate an average lifetime of a cloudlet of about 40 years.

We did the most direct investigations of the methanol maser ring using EVN. Forthcoming studies need to include sensitivity studies of thermal tracers at compatible angular resolution.

The research leading to these results has received funding from the European Commission Seventh Framework Programme (FP/2007-2013) under grant agreement No. 283393 (RadioNet3).

Results are available via [2020arXiv200400916B](https://arxiv.org/abs/2020arXiv200400916B) and are in press in Astronomy and Astrophysics:

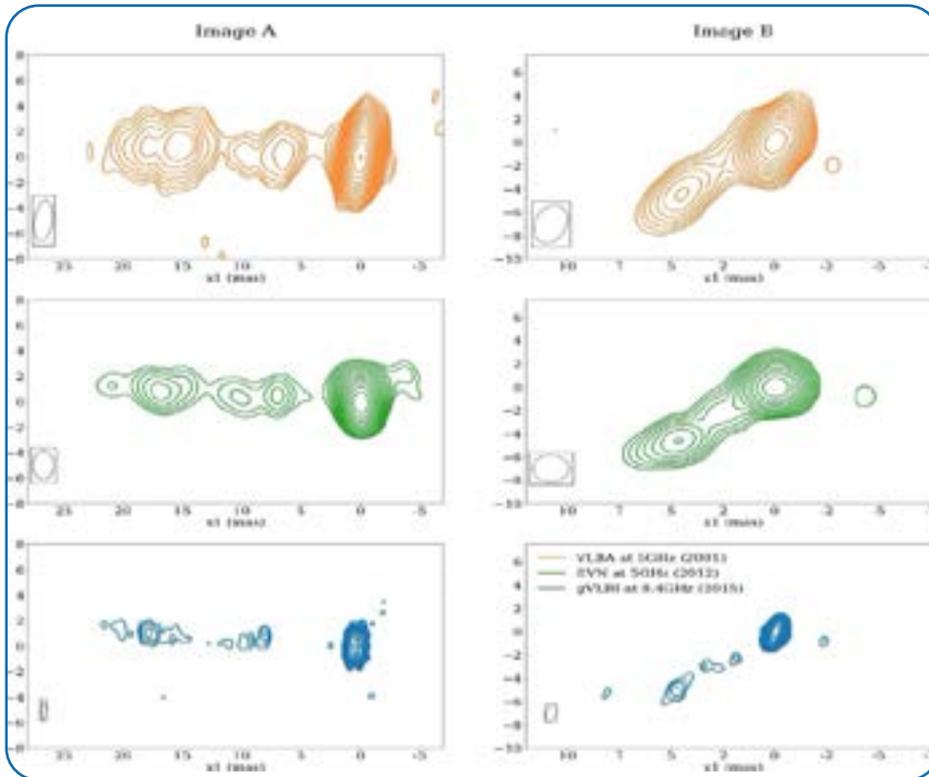
A. Bartkiewicz, A. Sanna, M. Szymczak, L. Moscadelli, H.J. van Langevelde and P. Wolak „The nature of the methanol maser ring G23.657 – 00.127 II. Expansion of the maser structure”



*Schematic models of maser expansion related to a sphere-like outflow or tracing a wide angle wind at the base of the protostellar jet.*

# THE CASE AGAINST GRAVITATIONAL MILLILENSING

*Eskil Varenius, Onsala Space Observatory,  
Chalmers University of Technology, Sweden*



*The two macrolensed images of B1152+199 from the re-imaged 2001 VLBA 5GHz dataset (top row), the 2012 EVN 5GHz dataset (middle row), and the 2015 Global VLBI array 8.4 GHz data set (bottom row). In each case, the beam size is indicated in the lower left corner. The faintest contours are set to 3, 10, and 3 times the RMS noise, respectively, from top to bottom. Each subsequent contour is set at 2 times the previous one.*

Very Long Baseline Array (VLBA) observations of the quasar B1152+199 at 5GHz in 2001 revealed two images of a strongly lensed jet with seemingly discordant morphologies; see top row of Figure 1. Whereas the jet appears straight in image A, image B exhibits slight curvature on milliarcsecond scales. This is unexpected from the lensing solution and has been interpreted as possible evidence for secondary, small-scale lensing (millilensing) by a compact object, with a mass of  $10^5$ – $10^7$  solar masses, located close to the curved image (Rusin et al. 2002; Metcalf 2002).

The probability for such a superposition is extremely low unless the millilens population has very high surface number density. In Asadi et al. (2020) we revisit the case for

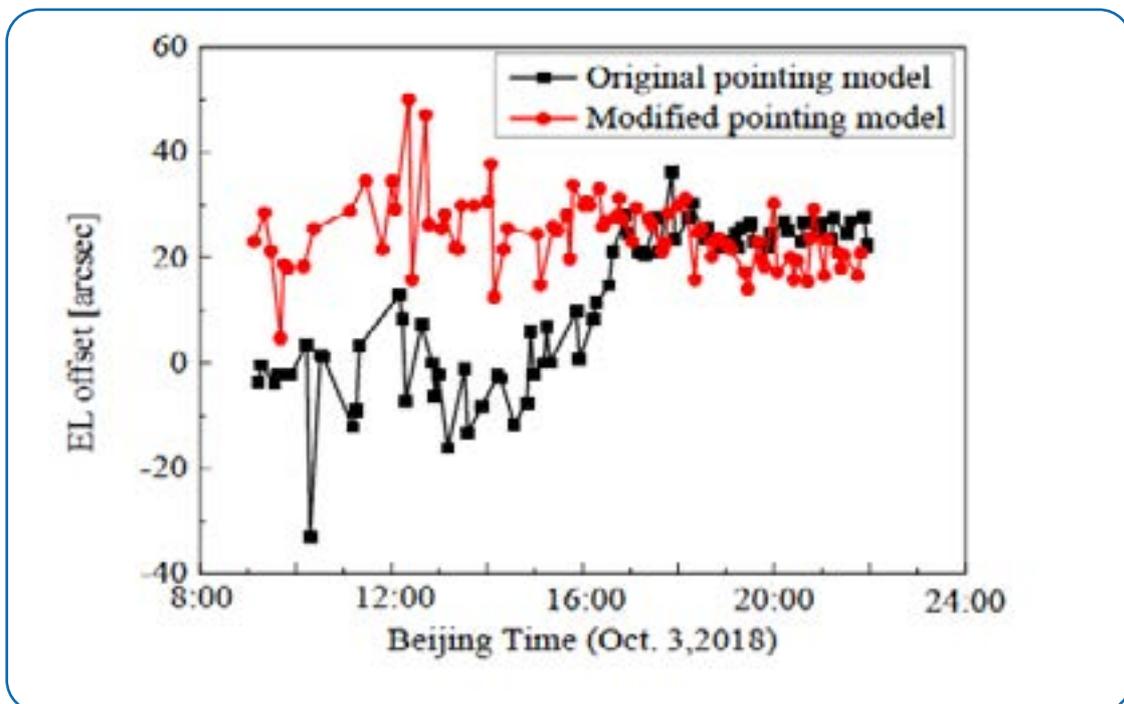
millilensing in B1152+199 by combining new global-VLBI data at 8.4 GHz with two data sets from the European VLBI Network (EVN) at 5 GHz (archival), and the previously published 5 GHz VLBA data. We find that 5 GHz EVN data, with a more circular synthesized beam, exhibits no apparent milliarcsecond-scale curvature in image B (Figure; middle row).

Various observations of the object spanning  $\sim 15$  yr apart enable us to improve the constraints on lens system. We argue that the only plausible explanation for the apparent curvature in the original VLBA images is artificial, due to the particular combination of the the shape of the synthesized beam and the relative angle and structure of the radio jet.

## NETWORK HIGHLIGHTS

# IMPROVEMENT OF THE POINTING PRECISION OF THE TIANMA RADIO TELESCOPE WITH AN INCLINOMETER MEASUREMENT SYSTEM

*Bo Xia, Shanghai Astronomical Observatory, CAS*



*Compensated results based on the inclinometer modified model*

To assure high pointing precision of the Tianma radio telescope (TMRT), new models based on a inclinometer measurement system are added to the classical pointing model. This involves four main tasks.

Firstly, the inclinometer measurement system is set up and its precision is evaluated.

Secondly, a feedback control strategy for pointing error for the turbulences of uneven azimuth track and thermal deformations of alidade is implemented.

Thirdly, after removing the linear effect of uneven track, sine fitting inclinometer data obtains the model of nonlinear effect of azimuth-track-level unevenness. The

nonlinear effect is less than  $\pm 5$  arc-sec. The azimuth angles associated with large pointing error show a good agreement with those corresponding to poor track unevenness.

Finally, the TMRT inclinometers monitor the effect of thermal deformations of alidade on the pointing precision of elevation from stow position, to observing almost motionless radio source, to arbitrary postures of radio telescope.

The measured data after subtracting other affected factors of inclinometer including intrinsic drift, azimuth-track unevenness, variation of the center of gravity have similar tendency with the simulated results of finite element model (FEM).

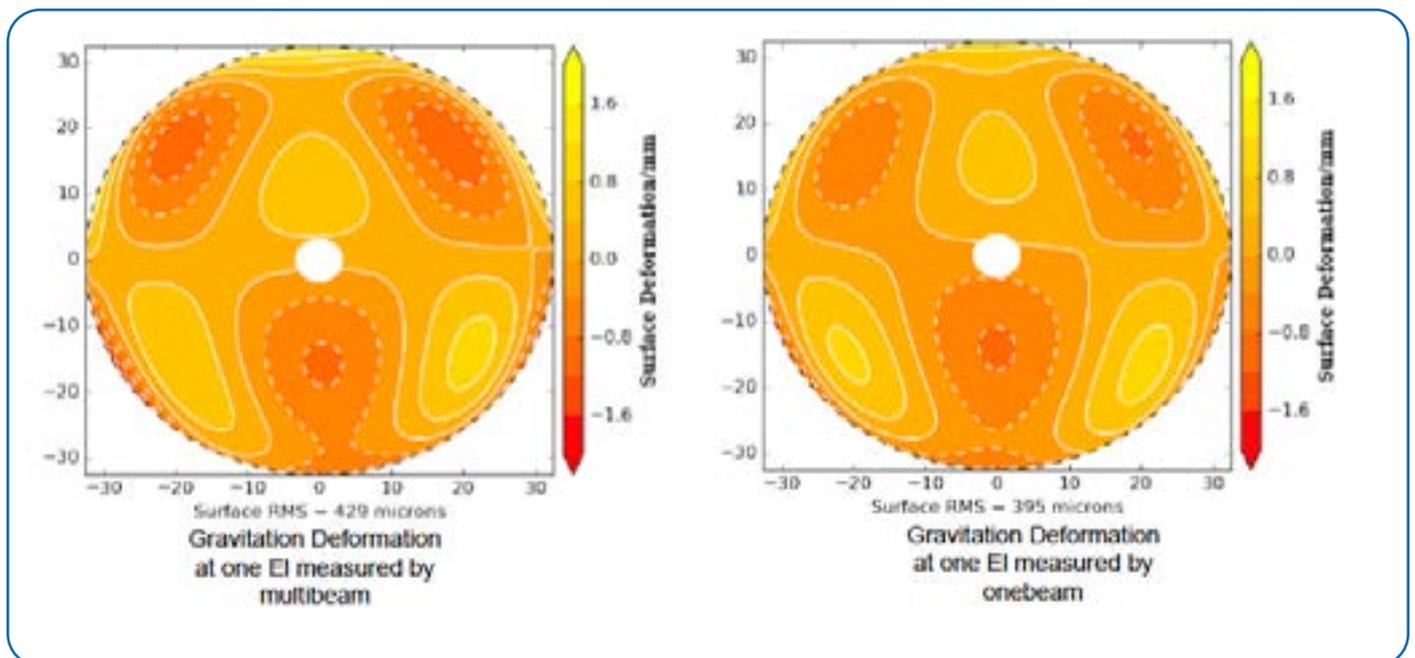
Applying established real-time modified model to observe the radio source 2334+8226, the checking results show that the pointing precision improved 65%.

### Surface measurement by using multibeam

A method to quickly measure the primary surface dynamic deformation of radio telescope for improving high-frequency observation efficiency is proposed. It is based on the similarity and overlap of the multibeam patterns, and phase retrieval method.

Firstly, the pointing offsets relative to the center are subtracted from a part of in-focus and defocus patterns of each beam, and these patterns are spliced to construct a group of complete in-focus and defocus patterns of the center beam.

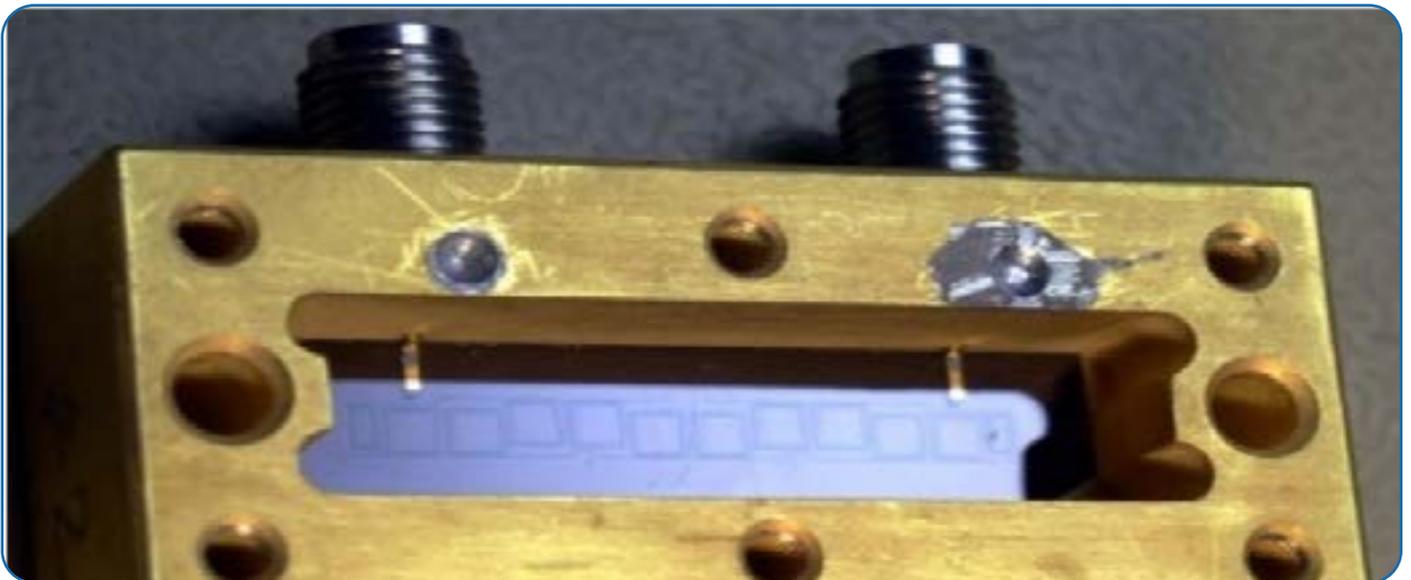
Secondly, the sum of squared residuals by which the splicing patterns differs from the theory ones are minimized based on the Levenberg-Marquardt algorithm, to calculate the coefficients of Zernike polynomials, and the primary reflector dynamic deformation is retrieved. The measurement time is about 8 minutes.



## TECHNICAL HIGHLIGHTS

# HIGH TEMPERATURE SUPERCONDUCTIVE FILTER FOR RFI REJECTION IN S-BAND RECEIVERS

*Pablo García-Carreño, Jose A. Lopez-Perez  
Yebe Observatory, Spain*



*S-Band HTS Yebe Observatory filter with spiral resonators.  
Credits: Sergio Mariotti, INAF, Italy*

Radio Frequency Interference (RFI) is one of the biggest problems that radio astronomy is facing nowadays, due to the increasing number of emerging wireless technologies in the telecommunication market. Even if some frequency bands are allocated to the radio astronomy service (RAS) in primary, radiotelescopes and their associated receivers may suffer interferences from in-band and out-of-band emissions.

Therefore, techniques for RFI mitigations are

required either in hardware or in software form. When the RFI signal is so powerful that can saturate, or even damage, the state-of-the-art low noise amplifiers (LNA) located at the receiver's front-end, the best solution is to use a filter prior to the LNA to reject that signal. Due to its position in the receiver chain, the losses associated with this filter have to be as low as possible. High temperature superconducting (HTS) materials offer this low-loss performance and filters made with this technology have proven

to be a very reliable solution for this RFI issue [1][2][3]. The price to pay for a good LNA protection against saturation or damage is a slight increase in the receiver noise.

In this context, an HTS filter for the Yebes VLBI S-band receiver has been designed in collaboration with the University of Birmingham, INAF-IRA, and Yebes Observatory. This filter has been designed with spiral resonators, being its central frequency at 2295 MHz, with a bandwidth of 7% covering the legacy geodetic VLBI band (2.2-2.37 GHz). A large rejection outside the pass band (60 dB) was specified in order to reject the ISM band (2.4 GHz) where technologies such as WiFi and Bluetooth appear, and the UMTS band (1.8 and 2.1 GHz)

The HTS substrate is 0.5 mm thick Magnesium Oxide, coated on both sides with 600 nm of Yttrium Barium Copper Oxide (YBCO) and further coated with 200 nm of gold, from which the small pads for external connections are fabricated; the gold was removed everywhere else as it is more lossy than YBCO. These pads were connected by means of conducting epoxy to sliding contacts mounted on the central pins of standard coaxial Kconnectors (2.92 mm).

The actual circuit is 30mm×8mm in size, including some empty space between the spirals and the box walls.

The filter will be integrated into the S-band receiver dewar, in its cold stage, with a temperature that will range between 10-20 Kelvin. At these temperatures the superconductor YBCO acquires the superconducting conditions which are reached below 70-80 Kelvin. In this state, this material

has a surface resistance of approximately 100 times less than that of copper (the standard material used in microstrip circuits). In addition, the shape of the filter response is not strongly affected by temperature and it matches very well with the electromagnetic simulations.

The figures show the final results of the designed filter, in this case, it is a comparison of the cryogenic measurements carried out in Yebes, Arcetri and the simulation.

Although different methods were used for the calibrations, the results obtained are very similar. When the measurements are compared with the simulation, three effects can be observed:

- A negligible deviation in the center frequency (6 MHz)
- An increase of insertion losses due to the coaxial K connectors
- Some differences in the port matching, due to calibration errors when measuring low-loss devices with the vector network analyzer (VNA).

Detailed information on this development can be found in: Huang F, et al. "A Superconducting Spiral Bandpass Filter designed by a Pseudo-Fourier Technique" IET Microwaves Antennas & Propagation, Volume 12, Issue 8, 1293 - 1301, February 2018

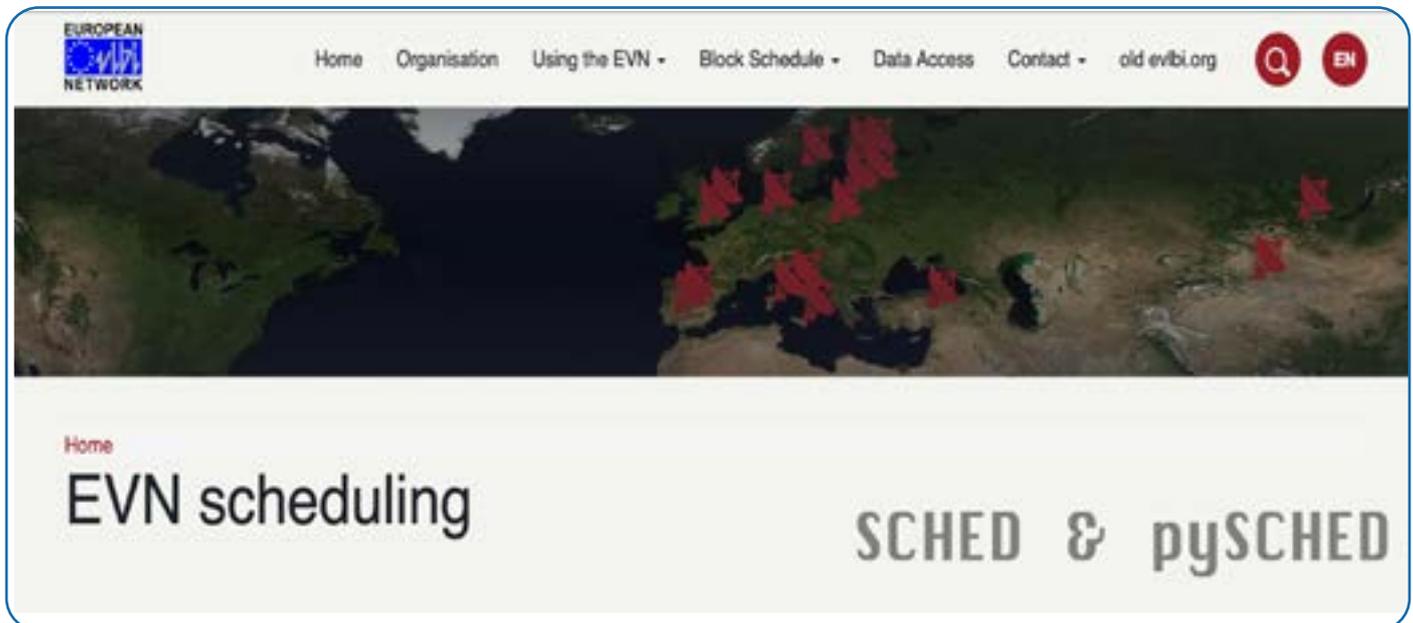
[1] Bolli, P et al.: 'A high temperature superconductor microwave filter working in C-band for the Sardinia radio telescope', *J. Astron. Instrum.*, 2014, 3, (1), pp. 1–16

[2] H. Kayano, "Cryogenic Receiver with Superconducting Filter," 2018 IEEE International Symposium on Radio-Frequency Integration Technology (RFIT), Melbourne, VIC, 2018, pp. 1-3.

[3] Bolli, P., Cresci, L., Huang, F. et al. A high temperature superconductor notch filter for the Sardinia Radio Telescope. *Exp Astron* 45, 165–176 (2018).

# GUIDING USERS ON THE SCHEDULING OF EVN OBSERVATIONS

*Katharina Immer & Benito Marcote, Joint Institute for VLBI-ERIC*



*Webpage with the new featured guide to prepare EVN schedules*

The EVN is a unique VLBI network in terms of sensitivity and resolution at gigahertz frequencies. But such a network, with a large number of antennas spread over the globe, also means that the scheduling may appear harder than in the case of less-extended observatories.

EVN (and VLBI in general) observations have been traditionally scheduled by using the NRAO SCHED program. Users are requested to prepare their scheduling files ahead of the observations (by sending the .key file to JIVE). JIVE provides support to all EVN users in order to help in the schedule preparation. However, we are aware that the first time astronomers approach these tools can be a bit appalling.

Recently, JIVE has built pySCHED, that takes advantage of newer more-sophisticated tools based on Python and simplifies the scheduling of these observations.

As a next step, the EVN webpage now includes a page explaining how to schedule regular EVN observations (<https://www.evbi.org/evn-scheduling>). A detailed explanation of how to prepare this file, including some initial template files, is now in place. We also include a detailed description of the main points to be considered during scheduling. Examples of how the observing scans can be arranged and calibrator sources selected are also provided, covering the most common types of EVN observations: continuum, phase-referencing, spectral-line, or polarization observations.

We hope this documentation will make the scheduling of your future EVN observations easier and more intuitive than before. In any case, we are always happy to get feedback from the EVN community and provide support for any observation.

*SCHED is a program maintained and developed by the NRAO (<https://www.aoc.nrao.edu/software/sched/>). pySCHED is built upon SCHED and is being developed at JIVE (<https://github.com/jive-vlbi/sched>).*

# OTHER NEWS

## NEWS FROM JUMPING JIVE

*Giuseppe Cimò, Joint Institute for VLBI-ERIC*

Many things have happened in the first few months of 2020. The H2020 JUMPING JIVE project is up and running, for the most part remotely as the rest of the world. Many activities are being affected by the measures to prevent the spread of CoVid-19. Due to the limiting measures of the pandemic JUMPING JIVE team members have been working from home to continue helping JIVE and the EVN to maximize their profile, innovation and necessary globalization.

A very evident effect of CoVid-19 pandemic is

the cancellation or deferral of all the events planned for the first half this year. However, this has allowed us to try different levels of engagement that do not require physical presence.

JUMPING JIVE is actively organising the Special Session 16 "Registering the Universe at the highest spatial accuracy" at EAS2020 (See Fig 1). Now, the EAS will be fully online and SS16 Scientific Organising Committee, chaired by JUMPING JIVE WP2 leader, has strongly supported this move. Until late

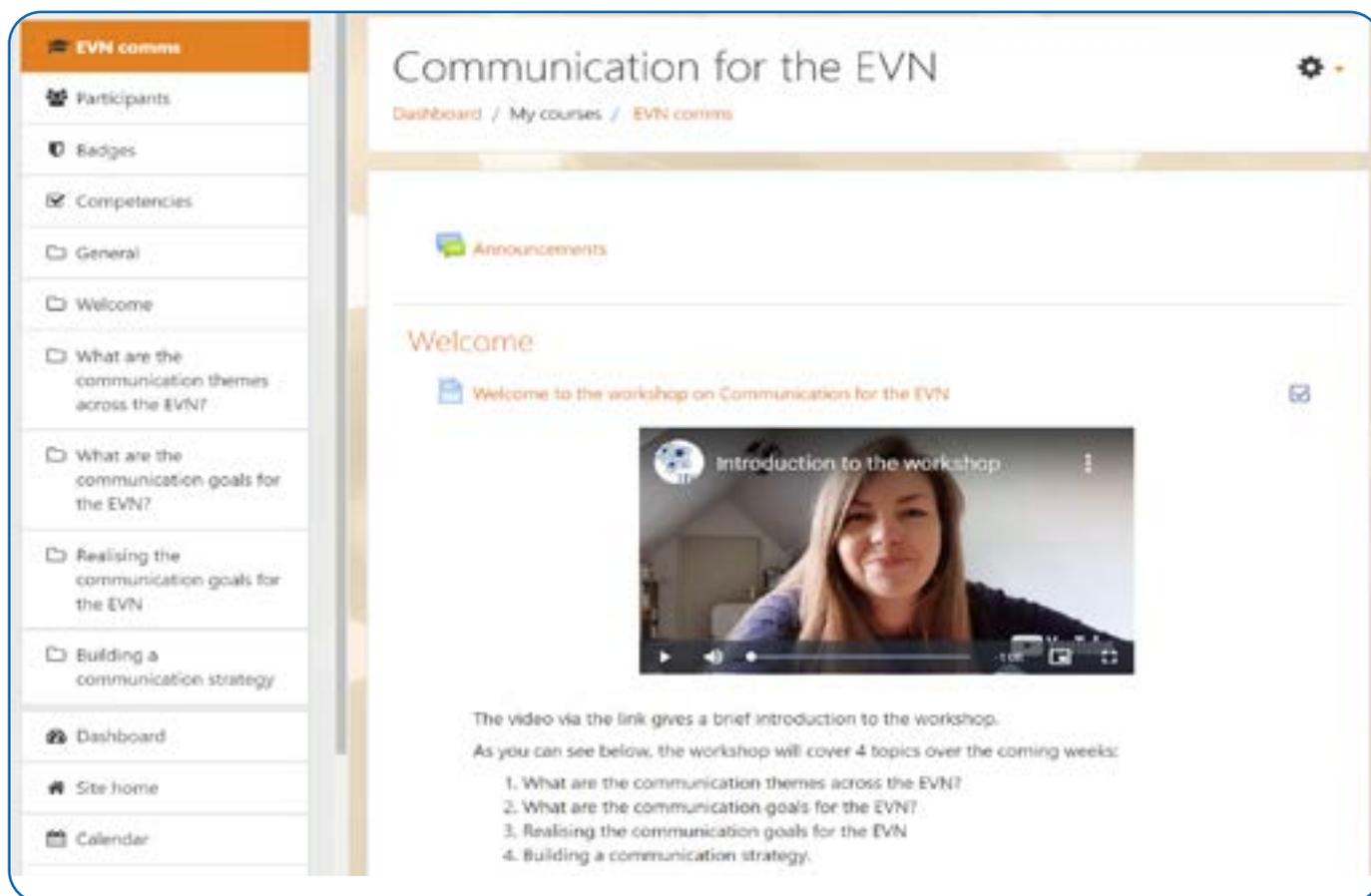
The screenshot shows the website for the European Astronomical Society Annual Meeting (EAS 2020). The header includes the text "EUROPEAN ASTRONOMICAL SOCIETY ANNUAL MEETING EAS 2020 (EWASS) Moving towards a virtual meeting" and a background image of a classical building. A navigation menu on the left lists various sections like "Welcome & News", "About", "Organisers", "FAQ", "Dates", "Registration", "Abstract Submission", "Programme", "Plenary Lectures", "Accommodation", "Conference Poster", "Sponsorship & Exhibition Kit", "Sponsors & Exhibitors", "Press & Media", and "Contact". The main content area is for "Special Session 5516" on "29 June 2020", titled "Registering the Universe at the highest spatial accuracy". It includes a "News" section, an "Aims and scope" section, and a "Programme" section. A small graphic on the right shows a satellite dish and celestial objects, with the text "EAS Special Session 16: Registering the Universe at the highest spatial accuracy". The EAS 2020 Virtual logo is at the bottom left.

May, it will be possible to register and submit an abstract to attend the Special Session remotely.

On April 20 and 21, a workshop entitled "Communication for the European VLBI Network" was planned in Dwingeloo to increase knowledge exchange and develop working practices across the EVN. Instead of cancelling the event, we have redesigned it as an online workshop that takes place over a series of weeks to reduce the pressure on people having to be online at a particular time. During the course, the participants will explore existing communication between EVN institutes,

hear lessons learnt from other networks and develop approaches to publicising scientific results obtained using the EVN.

The Participants will be able to work on the activities at their own pace - some of these, however, require everyone to submit something before we can begin on the next. Fig 2 shows how the workshop looks on Moodle, the online platform used for online courses. The event is running at the time of writing this newsletter entry and there is already very good engagement between the participants.



# UPCOMING MEETINGS

## CASA-VLBI WORKSHOP 2-6 NOVEMBER 2020

*Ilse van Bemmelen, Joint Institute for VLBI-ERIC*



*Registration deadline: 31<sup>st</sup> July 2020  
Registration Fee: €100*

In these strange and difficult times we continue to look forward optimistically. Building on the success of previous educational events, JIVE will organise a next CASA-VLBI workshop. The purpose will be to educate users of the EVN and other VLBI facilities in the use of CASA for VLBI data processing. The workshop will be held at the JIVE headquarters in Dwingeloo from 2nd-6th November. There will be room for a maximum of 50 in-house participants, and we plan to have a small number of online participants.

The topics covered during the workshop will range from basic CASA use for new CASA users, to calibration of your own VLBI data. Scripting, Jupyter notebooks, and pipelines will be covered as well. A large part of the workshop will consist of hands-on experience by working on existing EVN calibration tutorials and/or your own data. The focus will be on astronomical applications of VLBI.

We welcome new and experienced CASA users, experience with VLBI data processing

is helpful, but not mandatory. Participants are expected to bring their own hardware with a working version of the latest CASA release.

As an experiment we plan to enable online participation for up to 10 participants. Pending the development of the COVID-19 pandemic, this number may increase, and we may even move the meeting completely online. The registration fee for in-house participation is €100, and includes all lunches, coffee and tea breaks. The fee will be waived for online participants. The fee will be revisited if we move to a fully online workshop.

Registration for the workshop is now open on the website, and will close on 31st July. In case of oversubscription we will make a selection and notify candidates of their participation by 15th August at the latest.

We look forward to welcoming you at JIVE in person and in good health!

- **EVN Technical and Operations Group & GMVA Technical Group meeting:** 5 May 2020, videoconference ; <https://events.mpifr-bonn.mpg.de/indico/event/144/>
- **EVN Consortium Board of Directors meeting:** 13 May 2020, videoconference
- **European Astronomical Society:** 29 June - 3 July 2020, virtual meeting; <https://eas.unige.ch/EAS2020/>
- **CASA-VLBI workshop 2020:** 2 - 6 November, JIVE, Dwingeloo, NL; <https://www.jive.eu/casa-vlbi2020>
- **15<sup>th</sup> EVN symposium:** postponed to summer 2021; Cork, Ireland
- **URSI 2020:** postponed; <https://www.ursi2020.org>

# *NEXT NEWSLETTER: SEPTEMBER 2020*

*Contributions can be submitted until  
**15 August 2020.***

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