



# European VLBI Network Newsletter

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## Message from the Chairman of the EVN Board of Directors

Dear Colleagues in the European VLBI Network, Dear Users of the EVN,

As the current EVN session observing is underway, an important deadline is approaching: June 30th 2016 is the early registration and abstract submission deadline for the 13th EVN Symposium, that will take place in St. Petersburg, on September 20-23. The meeting will be hosted by the Institute of Applied Astronomy, in St Petersburg. Further details can be found at the conference website.

Meanwhile, the Call for Proposals for the 1<sup>st</sup> June 2016 deadline has already been circulated and describes in detail some of the new options available to EVN users. More information can be found in the next section. The EVN Programme Committee will meet on July 1<sup>st</sup>, in Rome to review the new proposals.

A notable addition is the availability of e-VLBI observations at 2 Gbps at 6 cm and 1.3 cm at a subset of the EVN telescopes. The remaining telescopes will observe at 1 Gbps.

I also draw your attention to the announcement in this newsletter of the 46<sup>th</sup> Young European Radio Astronomers Conference (YERAC) hosted by the Max Planck Institute for Radio Astronomy, (MPIfR) that will take place in Bonn on September 5-9, 2016.

Earlier this summer a special session on VLBI, "Nanoradians on the sky: VLBI across the Mediterranean and beyond", will be held during the European Week of Astronomy and Space Science (EWASS 2016, 4-8 July 2016, Athens).

The EVN Consortium Board of Directors and the JIVE Council met on May 10 and 11, respectively, in Madrid. The next meeting of the EVN Consortium Board of Directors will be held on October 25 and 26 in Irbene, Latvia.

*René Vermeulen,  
Chairman, EVN Consortium Board of Directors*

## Call for the EVN Proposals

European VLBI Network  
Call for Proposals  
Deadline 1st May 2016

This text is also available on the web at: <http://www.oso.chalmers.se/evn/call.txt>

Observing proposals are invited for the EVN, a VLBI network of radio telescopes spread throughout Europe and beyond, operated by an international consortium of institutes (<http://www.evlbi.org/>).

The observations may be conducted with disk recording (standard EVN) or in real-time (e-VLBI).

The EVN facility is open to all astronomers. Use of the Network by astronomers not specialised in the VLBI technique is encouraged.

The Joint Institute for VLBI ERIC (JIVE) can provide support and advice on project preparation, scheduling, correlation and analysis. See EVN User Support at <http://www.jive.eu>.

### Future Standard EVN Observing Sessions (disk recording)

2016 Session 3 Oct 20 - Nov 10 18/21 cm, 6 cm ...  
2017 Session 1 Feb 23 - Mar 16 18/21 cm, 6 cm ...  
2017 Session 2 May 25 - Jun 15 18/21 cm, 6 cm ...

Proposals received by 1st June 2016 will be considered for scheduling in Session 3, 2016 or later. Finalisation of the planned observing wavelengths will depend on proposal pressure. The dates for 2017 are as yet provisional.

### Future e-VLBI Observing Sessions (real-time correlation)

2016 Sep 21 - Sep 22 (start at 13 UTC) 18/21 cm, 6 cm, 5 cm or 1.3 cm  
2016 Oct 11 - Oct 12 (start at 13 UTC) 18/21 cm, 6 cm, 5 cm or 1.3 cm  
2016 Nov 15 - Nov 16 (start at 13 UTC) 18/21 cm, 6 cm, 5 cm or 1.3 cm  
2016 Dec 06 - Dec 07 (start at 13 UTC) 18/21 cm, 6 cm, 5 cm or 1.3 cm

Please consult the e-VLBI web page at:

[http://www.evlbi.org/evlbi/e-vlbi\\_status.html](http://www.evlbi.org/evlbi/e-vlbi_status.html) to check for possible updates, and for the available array.

Successful proposals with an e-VLBI component submitted by the June 1 deadline will be considered for scheduling in the above e-VLBI sessions starting from September 21 2016

Note that only one wavelength will be run in each e-VLBI session, selected based on proposal priorities.

See <http://www.jive.eu/jivewiki/doku.php?id=evn:guidelines> for details concerning the e-VLBI observation classes and observing modes.

#### New Features for the Next Standard EVN and e-VLBI Sessions

e-VLBI at 2 Gbps is available at 6 cm and 1.3 cm at a subset of the EVN telescopes. The remaining telescopes will observe at 1 Gbps (mixed mode observation). The current status is given here:

[http://www.evlbi.org/evlbi/e-vlbi\\_status.html](http://www.evlbi.org/evlbi/e-vlbi_status.html)

Disk recording at 2 Gbps is available at 6 cm, 3.6 cm, 1.3 cm and 0.7 cm at a subset of the EVN telescopes. The remaining telescopes will record at 1 Gbps (mixed mode observation). The current status is given here:

[https://deki.mpifr-bonn.mpg.de/Working\\_Groups/EVN\\_TOG/2Gbps](https://deki.mpifr-bonn.mpg.de/Working_Groups/EVN_TOG/2Gbps)

Use of this data rate should be clearly justified and limited to projects which really need it.

For integration of e-MERLIN telescopes into the EVN, see below.

Please consult [http://www.evlbi.org/evlbi/e-vlbi\\_status.html](http://www.evlbi.org/evlbi/e-vlbi_status.html) and the EVN User Guide

[http://www.evlbi.org/user\\_guide/user\\_guide.html](http://www.evlbi.org/user_guide/user_guide.html)

for updates on the current EVN and e-VLBI array, availability of different stations per observing band and for the dates of the e-VLBI observing sessions.

#### Global VLBI Proposals

Global proposals can be proposed up to 2 Gbps including VLBA, GBT and the JVLA.

Some modes may require different bandwidth channels from EVN & NRAO telescopes; correlation at JIVE can handle this.

JIVE support staff and Amy Mioduszewski at Socorro will assist during the scheduling process of such observations.

Global observations will be correlated at the SFXC correlator at JIVE (default) or at the DiFX correlator in Bonn or at the DiFX correlator in Socorro (if appropriate justification is given in the proposal).

#### RadioAstron Observations

Proposals requesting the EVN as ground array support for RadioAstron AO4 observations in the period October 20 to 30 June 2017 may be submitted at this deadline.

### Large EVN Projects

Most proposals request 12-48 hrs observing time. The EVN Program Committee (PC) also encourages larger projects (>48 hrs); these will be subject to more detailed scrutiny, and the EVN PC may, in some cases, attach conditions on the release of the data.

### Availability of EVN Antennas

The WSRT will be participating with a single telescope, equipped with dual circular polarization receivers. The frequency coverage will remain the same. Proposers who wish to use the EVN Calculator, should select "W1" instead of "Wb".

Tm65 is the 65 m telescope at Tianma, about 6 km away from the 25 m Seshan telescope (Sh). The 2-letter abbreviation for Tm65 telescope is T6. Both of these telescopes can observe at 18, 13, 6, 5, 3.6, and 3.6/13 cm. Tm65 can also observe at 21 cm. Tm65 is the default telescope; Sh will be used if the Tm65 is not available for some reason. If you select both, you should also discuss the motivation for the very short baseline in the proposal.

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

Integration of e-MERLIN outstation antennas into the EVN is now possible following recent software upgrades on the e-MERLIN correlator at Jodrell Bank. EVN experiments can now include multiple e-MERLIN outstation antennas in addition to an antenna at Jodrell Bank. The total recorded bandwidth for the outstations will be limited to 1 Gbps but can be divided between 1, 2 or 4 e-MERLIN antennas. PIs of proposals should indicate in the scientific justification which e-MERLIN antennas they wish to record. These data will then be available for correlation with all other EVN stations in mixed mode, providing a fully integrated additional set of short spacing EVN data for the first time. For example, within e-MERLIN, the baseline coverage from Jb + Da, Kn, De, and Cm would span separations of 11 to 220 km.

Proposers can alternatively still request a full bandwidth e-MERLIN observation for high sensitivity lower surface brightness imaging where the e-MERLIN telescopes are correlated at JBO. At L-Band the maximum bandwidth is 2x512 MHz, from Session I 2017, we envisage that at C- and K-Band a maximum bandwidth of 2x2 GHz will be available on a best efforts basis.

For any technical queries contact: vlbi@jb.man.ac.uk

### Use of Korean VLBI Network Antennas

The Korean VLBI Network (KVN) is an Associate Member of the EVN. KVN telescopes may be requested for EVN observations at 1.3 cm and 7 mm wavelengths. For more details regarding the KVN, see: [http://kvn-web.kasi.re.kr/en/en\\_normal\\_info.php](http://kvn-web.kasi.re.kr/en/en_normal_info.php)

### Use of Australian VLBI Network Antennas

Some Australian Long Baseline Array (LBA) time will be made available for simultaneous scheduling with the EVN, thus enabling the possibility of joint LBA/EVN observations. The easternmost stations of the EVN are in a similar longitude range to the LBA telescopes, and for sources in equatorial regions, baselines to western European stations are also achievable. Joint LBA time is likely to be heavily oversubscribed, and authors are requested to note whether they are prepared to accept scheduling without LBA antennas being present.

Any proposals for joint EVN+LBA observations submitted to the LBA by its 15 June 2016 deadline should also be submitted to the EVN by the 1 June 2016 deadline and will first be eligible for scheduling in EVN Session

3/2016.

For more details regarding proposing time on the LBA, see:

<http://www.atnf.csiro.au/observers/apply/avail.html> & <http://www.atnf.csiro.au/vlbi/index.html>

EVN+LBA observations should be possible at all principal EVN wavebands from 21 cm to 1.3 cm.: See: ([http://www.evlbi.org/user\\_guide/freq\\_cov.html](http://www.evlbi.org/user_guide/freq_cov.html)) & [http://www.evlbi.org/user\\_guide/EVNstatus.txt](http://www.evlbi.org/user_guide/EVNstatus.txt).

#### Out of Session Observing

Out-of-Session observing time (up to a maximum of 144 hours/year), is now available to all proposals (disk recording or e-VLBI).

Proposals requesting Out-of-Session observing time must provide full scientific (and technical if appropriate) justification as to why observations must be made outside standard sessions.

Out-of-Session observing blocks should be no less than 12 hours in duration (though individual observations can be shorter), and occur no more than 10 times per year.

Proposals should specify which dates/GST ranges are being requested and indicate the minimum requirement in terms of numbers of telescopes (and any particular telescopes).

Proposals will only be considered for dates occurring after the regular EVN session that follows EVN proposal review. Observations requiring much shorter lead times should be submitted as "Target-of-Opportunity" (ToO) proposals.

#### Joint observations with other facilities

For joint observations with other facilities, e.g., EVN+XMM, separate proposals should be submitted to the EVN and to the other facility. Such proposals will be considered by the EVN PC on a case-by-case basis.

#### How to Submit

All EVN and Global proposals (except ToO proposals) must be submitted using the NorthStar online proposal submission tool. Global proposals will be forwarded to NRAO automatically and should not be submitted to NRAO separately.

New proposers should register at <http://proposal.jive.eu>.

Proposals must include the following sections:

1. Science & technical justification
2. Figures, tables and references (optional)

These sections shall be submitted as a single PDF document. The total length of this document is limited to 4 pages (A4 or US Letter format), with a font size no smaller than 11 points. Proposers are free to adjust the length of the various proposal sections within this overall length limit.

The strongly recommended breakdown is 2 pages for the Science & technical justification and 2 pages for Figures, tables and references.

Figures and tables may be interleaved with the science justification, so that e.g. figures appear close to the location in the text where references are made to them.

When specifying requested antennas from the LBA, please specify 'LBA' under the "other" row in the telescope-selection box - this selects all that are available for joint observations.

The deadline for submission is 23:59:59 UTC on 1st June 2016.

#### Additional information

Further information on EVN, EVN+MERLIN, Global VLBI and e-VLBI observations, and guidelines for proposal submission are available at: <http://www.jive.eu/jivewiki/doku.php?id=evn:guidelines>

The EVN User Guide ([http://www.evlbi.org/user\\_guide/user\\_guide.html](http://www.evlbi.org/user_guide/user_guide.html)) describes the network and provides general information on its capabilities.

The current antenna capabilities can be found in the status tables.  
For the standard EVN see: [http://www.evlbi.org/user\\_guide/EVNstatus.txt](http://www.evlbi.org/user_guide/EVNstatus.txt)

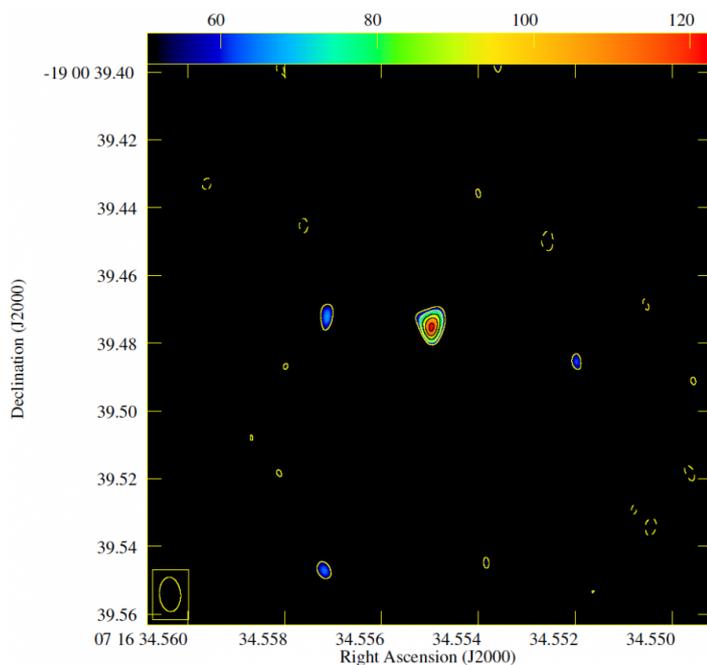
For the e-EVN array see [http://www.evlbi.org/evlbi/e-vlbi\\_status.html](http://www.evlbi.org/evlbi/e-vlbi_status.html)

The On-line VLBI catalogue (<http://db.ira.inaf.it/evn>) lists sources observed by the EVN and Global VLBI.

*Michael Lindqvist, Onsala Space Observatory, EVN PC Chairman*

## EVN Science Highlights

### EVN measurement of the FRB 150418 host galaxy candidate



On 2016 March 16, the e-EVN has observed the  $z \sim 0.49$  galaxy WISE J071634.59-190039.2, which [Keane et al. \(2016, Nature\)](#) proposed to be the host of the Fast Radio Burst FRB 150418. The observations lasted for 6 hours in e-VLBI mode, at 5 GHz, with 1 Gbps data rate, including the stations of Effelsberg, Hartebeesthoek, Jodrell Bank (Mk2 telescope), Medicina, Noto, Onsala, Torun, Westerbork, and Yebes.

The data revealed the presence of a compact source, with a peak brightness of  $129 \pm 27 \mu\text{Jy}/\text{beam}$  (4.8- $\sigma$  confidence level, [Marcote et al. Atel #8959](#)). Further observations with the EVN and a comparison with other projects carried out with the VLA, ATCA, VLBA, and eMERLIN, is expected to clarify important details about the nature of this radio source,

and in particular its association with the FRB.

## EVN Scheduler's Report

### 2016 Session 1: 18 February – 10 March

Wavelengths: 18/21, 5.0, 6.0 cm

Number of different user experiments observed: 21

Session Duration: 21.0 days                      Efficiency: 41.4%

Breakdown of observations by type and correlator. T-BYTES indicates the estimated disk usage (in TB).

Session-1, 2016	N-OBS	HOURS	DAYS	T-BYTES
TOTAL	24	208.0	8.7	1028.8
EVN-only	18	137.0	5.7	457.7
Global	3	62.0	2.6	548.6
Short Obs.	0	0.0	0.0	0.0
Tests	3	9.0	0.4	22.5
EVN Correlator	23	206.0	8.6	1020.5
Bonn Correlator	1	2.0	0.1	8.3
VLBA Correlator	0	0.0	0.0	0.0
eEVN Correlator	0	0.0	0.0	0.0
Other Correlator	0	0.0	0.0	0.0
CAL-only	3	12.0	0.5	0.0
MERLIN	6			
Arecibo	0			
VLBA	3			
GBT	1			
VLA	0			
Robledo	6			
Goldstone	0			
RadioAstron	2			
KVN	0			
Wettzell	0			

### 2016 e-VLBI Observations

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RUN	DATE	WTH	HRS	e-VLBI		PROPOSAL		TYPE	
				Normal	Short	Disk	ToO	Trigger	
16e01	12JAN16	18cm	15	2	0	-	0	1	sched 0 trig
16e02	02FEB16	6cm	19.5	3	0	-	0	3	sched 0 trig
16e03	15MAR16	6cm	34	2	0	-	2	2	sched 0 trig
16e04	12APR16	5cm	7	1	0	-	0	0	sched 0 trig
16e05	10MAY16	6cm	24	1	3	-	1	2	sched 0 trig

## 2015 Out-of-Session Observations

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OoS2015	N-OBS	HOURS	DAYS	T-BYTES
TOTAL	9	84.0	3.5	150.7
EVN Correlator	4	42.0	1.7	43.7
Bonn Correlator	2	24.0	1.0	91.6
ASC Correlator	3	18.0	0.8	15.4
MERLIN	0			
Arecibo	3			
VLBA	2			
GBT	2			
VLA	1			
Robledo	5			
RadioAstron	9			
KVN	1			

## 2016 Out-of-Session Observations (so far)

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OoS2016	N-OBS	HOURS	DAYS	T-BYTES
TOTAL	13	92.0	3.8	312.2
EVN Correlator	0	0.0	0.0	0.0
Bonn Correlator	4	51.0	2.1	301.2
ASC Correlator	4	11.0	0.5	11.0
eEVN Correlator	5	30.0	1.2	0.0
MERLIN	0			
Arecibo	5			
VLBA	4			
GBT	0			
VLA	0			
Robledo	6			
RadioAstron	4			
KVN	2			

*Alastair Gunn, University of Manchester, EVN Scheduler*

## Recent and Upcoming Meetings

### 8 July 2016: EWASS 2016 Special Session SS10: Nanoradians on the sky



On Friday July 8, during the European Week of Astronomy and Space Science (EWASS 2016, 4-8 July 2016) in Athens, Greece, a special session will be organized for VLBI:

Nanoradians on the sky: VLBI across the Mediterranean and beyond  
(see <http://eas.unige.ch/EWASS2016/session.jsp?id=SS10> )

This session is dedicated to the future of European (and Global) VLBI in general, but more specifically to how we will do VLBI with the Square Kilometre Array (SKA-VLBI). The 1.5-hour long blocks are organized around three probable SKA-VLBI Key Science areas. These are: Astrometry, AGN and wide-FoV Surveys, and Explosive Phenomena/Transients. The meetings programme can be found at: <https://events.kuoni-dmc.com/Ei3/Images/EWASS2016/Sessions%20programmes/SS10.htm>



### 20-23 September 2016: The 13th European VLBI Network Symposium

The 13th European VLBI Network (EVN) Symposium and the EVN Users meeting will be hosted by the Institute of Applied Astronomy of the Russian Academy of Sciences (IAA RAS) in St.Petersburg, Russia, on September 20-23, 2016.

Further information is available at the conference web site:

<http://www.ipa.nw.ru/EVN2016>.



The deadline for the early registration and abstract submission is June 30<sup>th</sup>, 2016. The registration form and instructions can be found following the link:

<http://www.ipa.nw.ru/EVN2016/abstracts.html>

Please note that a limited amount of funds is available for financial support to participants who make a request in their registration form. This support consists of partial or total waving of the registration fee. Successful applicants will be notified in due course.

The conference programme will be announced in the last days of August.

## **5-9 September 2016: The 46<sup>th</sup> Young European Radio Astronomers Conference (YERAC)**

The logo for YERAC 2016 features the word "YERAC" in a large, bold, grey sans-serif font. Below it, the year "2016" is written in a smaller, bold, orange sans-serif font.

The Young European Radio Astronomers Conference (YERAC) has been held annually in different radioastronomical centers in Europe since 1968 and has enabled many graduate students and young post-docs doing radio astronomical research to meet and present their current work. This year, YERAC will be hosted and sponsored by the Max Planck Institute for Radio Astronomy, (MPIfR) in collaboration with its IMPRS for Astronomy and Astrophysics, in Bonn on September 5-9, 2016.

Participation is by recommendation only and the registration deadline is 31<sup>st</sup> August, 2016. Further information is available at: <https://events.mpifr-bonn.mpg.de/indico/event/13/>