European VLBI Network Newsletter

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Contents

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Message from the Chairman of the EVN Board of Directors

I am very pleased to report a number of decisions taken by the EVN Consortium Board of Directors (CBD) at our recent meeting in Onsala.

First, I am delighted to announce that Michael Lindqvist from Onsala Space Observatory has agreed to serve as EVN Program Committee Chair from 1st January, 2015. The present PC Chair, Tom Muxlow, has kindly agreed to prolong his term until the end of 2014 to ease the transition period. Michael has been very active within the EVN for a number of years, both as Onsala VLBI friend and Scheduler and as a member of the Program Committee since 2005. Since January 2012 he has also been Chair of the Technical and Operations Group.

The CBD also gave the go-ahead for future and expanded observing opportunities. Firstly, the dates for EVN sessions in 2015 were agreed, as follows:

2015 Session I: Thursday 26 February - Thursday 19 March
2015 Session II: Thursday 28 May - Thursday 18 June
2015 Session III: Thursday 15 October - Thursday 5 November

The traditional windows for these avoid major holidays such as Christmas, New Year and Easter but a number of other "regional" holidays must also be avoided to ensure that truly Global observations are possible, including US Thanksgiving, Scandinavian mid-Summer and the Chinese New Year (which this year is unusually late).

To further expand global array capabilities, the CBD agreed to advertise the possibility of joint observations with the Australian LBA. For equatorial sources this can not only provide a rich set of baselines between Australian telescopes and the eastern part of the EVN, but can also extend the length of time for which a variable source can be followed continuously, moving from one array to the next.

It was also agreed that up to 6 days per year can be scheduled "Out-of-session" (as mentioned in EVN Newsletter 35 in May last year). Proposers should consult the 1 June Call for Proposals to find out what restrictions there will be on proposals for using this observing opportunity.

It is very gratifying to note that two more large telescopes are coming on-line and capable of significantly enhancing the EVN's sensitivity. The first of these to produce fringes (November last year) is the 65m Tianama telescope near Shanghai. Referred to as "T6", it participated in EVN test observations in EVN Session-I this year at 18, 5, and 6 cm.

The new 64m Sardinia Radio telescope (SRT), code "Sr", gave first fringes in February this year, and also participated in the EVN Session-I test observations. The CBD is encouraging these observatories to make both telescopes fully available for EVN sessions, once commissioning observations are completed.

A further welcome development announced at the CBD meeting was the successful correlation of eMERLIN telescopes using signals in VDIF format emerging from the eMERLIN correlator. This paves the way for future "true" EVN+eMERLIN observations, with correlation of multiple individual eMERLIN out-station telescopes (Cambridge, Pickmere, Defford..) on baselines to other EVN telescopes, using the EVN correlator at JIVE.

Finally, let me remind you that the next EVN Symposium will be held in Cagliari, Sardinia from 7th to 10th October this year. The program will include a visit to the new telescope. Registration is now open and you are warmly encouraged to sign up.

Anton Zensus,
Chair, EVN Consortium

Call for the EVN Proposals

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European VLBI Network
Call for Proposals
Deadline 1st June 2014
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This call is also available in text and pdf formats at:
http: //www.jb.man.ac.uk/vlbi/EVN/call-jun14.txt and
http: //www.jb.man.ac.uk/vlbi/EVN/call-jun14.pdf

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 in Europe (JIVE) can provide support and advice on project preparation, scheduling, correlation and analysis. See EVN User Support at http://www.jive.nl.

Future Standard EVN Observing Sessions (disk recording)

2014 Session 3 Oct 16 - Nov 06 18/21cm, 6cm ...
2015 Session 1 Feb 26 - Mar 19 18/21cm, 6cm ...
2015 Session 2 May 28 - Jun 18 18/21cm, 6cm ...

Proposals received by 1st June 2014 will be considered for scheduling in Session 3, 2014 or later. Finalisation of the planned observing wavelengths will depend on proposal pressure.

Future e-VLBI Observing Sessions

2014 Jun 24?Jun 25 (start 13 UTC) 18/21cm, 6cm, 5cm or 1.3cm
2014 Sep 16?Sep 17 (start 13 UTC) 18/21cm, 6cm, 5cm or 1.3cm
2014 Oct 08?Oct 09 (start 13 UTC) 18/21cm, 6cm, 5cm or 1.3cm
2014 Nov 18?Nov 19 (start 13 UTC) 18/21cm, 6cm, 5cm or 1.3cm
2014 Dec 02?Dec 03 (start 13 UTC) 18/21cm, 6cm, 5cm or 1.3cm

Please consult the e-VLBI web page at
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 1st deadline will be considered for scheduling in the above e-VLBI sessions starting from Sep 16th 2014.

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

See http://www.e-merlin.ac.uk/vlbi/evn_docs/guidelines.html for details concerning the e-VLBI observation classes and observing modes.

Features for the Next Regular EVN and e-VLBI Sessions

* Both Jb1 and Jb2 will be available for EVN recording, as will simultaneous EVN+e-MERLIN operations with home-station EVN recording. For such simultaneous EVN+e-MERLIN operations, VLBI data from Cm will be made available at up to 512Mbps (e.g. 64MHz in both hands of circular polarization) on a best efforts basis.

For updated information please consult the web at: http://www.e-merlin.ac.uk/vlbi/

* Please consult http://www.evlbi.org/evlbi/e-vlbi_status.html and the EVN User Guide 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 1Gb/s including VLBA, GBT, JVLA.

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

* JIVE support staff 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 (if appropriate justification is given in the proposal).

RadioAstron Observations

* Proposals requesting the EVN as ground array support for RadioAstron proposals for the AO2 period (1 July 2014 - 30 June 2015) should be submitted at this deadline.

Large EVN Projects

* Most proposals request 12-48hrs 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

* Medicina and Urumqi should return to the EVN in Session 3, 2014. The Sardinia 64m telescope (SRT) remains in a commissioning phase but is available on a "best efforts" basis from Session 3, 2014. The Robledo 70m telescope is occasionally available for EVN observations but will be unavailable from 27th October to 30th November 2014. WSRT will provide a reduced (possibly 8-antenna) array in EVN Session 3, 2014. From Session 1, 2015, the availability of WSRT as a phased array is not certain and WSRT may be participating with a single telescope.

Use of Korean VLBI Network Antennas

* The Korean VLBI Network (KVN) has now become an Associate Member of the EVN (as from January 2014). KVN telescopes may be requested for EVN observations at 1.3cm and 7mm wavelengths. For more details regarding the KVN, see: http://kvn-web.kasi.re.kr/en/en_normal_info.php

Use of Australian VLBI Network Antennas

* It is planned that starting in Session 1 2015, 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 in that and future disc sessions. 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. Proposals for joint LBA/EVN observations in Session 1 2015 must be submitted separately to both the LBA and EVN for their respective June deadlines (EVN: June 1 2014, LBA: June 18 2014). For more details regarding proposing time on the LBA, see: http://www.atnf.csiro.au/observers/apply/avail_2014oct.html

Out-of-Session Observing

* Over the past year, a trial implementation of EVN outside of standard session observing, in which time was reallocated from within the standard disc sessions, has been explicitly devoted to RadioAstron A01 proposals.

From the 1st June 2014 deadline, this Out-of-Session observing time (up to a maximum of 144 hours/year), will be available to all proposals. Proposals requesting Out-of-Session observing time must provide full scientific (and technical if appropriate) justification as to why observations must be made outside regular sessions. Out-of-Session observing blocks should be no less than 12 hours in duration (although individual observations can be shorter), and occur no more than 10 times per year (up to a maximum of 144 hours). 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 the proposal deadline. Observations requiring much shorter lead times should be submitted as "Target-of-Opportunity" proposals.

How to Submit

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

When specifying your "Recording format" for Global modes in the EVN proposal tool, select 32. 64. 128, 256, 512, or 1024 Mbps from the "Specify aggregate bitrate (use network defaults)" menu.

New proposers should register at http://proposal.jive.nl.

The SCIENTIFIC JUSTIFICATION MUST BE LIMITED TO 2 PAGES in length. Up to 2 additional pages with diagrams may be included.

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 2014.

Additional information

Further information on Global VLBI, EVN+MERLIN and e-VLBI observations, and guidelines for proposal submission are available at: http://www.e-merlin.ac.uk/vlbi/evn_docs/guidelines.html

The EVN User Guide (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

For the e-EVN array see 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.

Tom Muxlow, University of Manchester, EVN PC Chairman

EVN Science Highlights

PSR J0218+4232a – the most energetic Gamma-ray millisecond pulsar

In recent years, many mysterious gamma-ray sources have been identified as millisecond pulsars. As most of them are much weaker than the normal radio pulsars in radio, it is hard to measure their distance accurately and put a tight constraint on their luminosity.

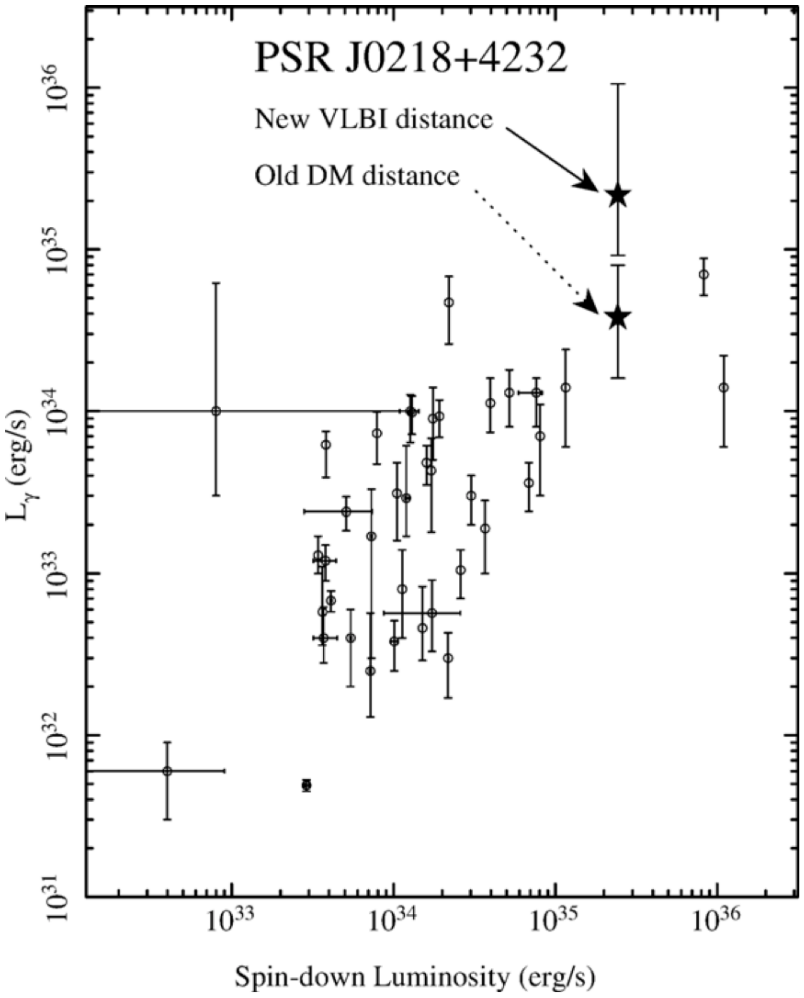


Figure 1. PSR J0218+4232 Gamma-ray luminosity vs spin-down luminosity. The rest of data points come from the second catalog of Fermi-LAT millisecond pulsars (Abdo et al. 2013).

PSR J0218+4232 is the first confirmed gamma-ray millisecond pulsar and has a flux density of half a mJy at 1.6 GHz. We conducted a 5-epoch astrometric campaign with the European VLBI Network at L-band, from November 2010 to October 2012, measuring its proper motion and parallax. The proper motion ($[5.35 \pm 0.05, -3.74 \pm 0.12]$ mas/yr) is consistent with the most recent values from timing analysis, but with uncertainties six times lower. The parallax detection was marginally significant (0.16 ± 0.09 mas), corresponding to a distance of $6.3^{+8.0}_{-2.3}$ kpc, and to a 3-sigma lower limit of 2.3 kpc. The distance in turn provides a direct constraint on the millisecond pulsar's gamma-ray luminosity: 2×10^{35} erg/s. This is the highest luminosity known to date among the class of gamma-ray millisecond pulsars. Even if we conservatively use the 3-sigma lower-limit distance, J0218+4232 is one of the three most luminous millisecond pulsars in gamma rays, and challenges some conventional theoretical explanations of the gamma-ray emission mechanisms.

For more details, see Du et al. 2014, ApJ, 782, L38 (http://adsabs.harvard.edu/abs/2014ApJ...782L..38D).

Jun Yang (JIVE; currently at Onsala Space Observatory), Bob Campbell (JIVE), and Yuanjie Du (National Space Science Center, China)

EVN never stops making discoveries on the nature of HST-1 in M87

The nearby radio galaxy M87 offers a unique opportunity for understanding the formation of relativistic jets and its connection to the gamma-ray production up to TeV energy. In particular, the peculiar jet feature so-called HST-1 has been attracting a great deal of attention in the last decade as an interesting candidate of the gamma-ray production given its unusual distance of ~120 pc from the nucleus. HST-1 is also suggested to be located at a parabola-to-conical transition point of the M87 jet, meaning that this feature is also a key for understanding the overall collimation mechanism of this jet.

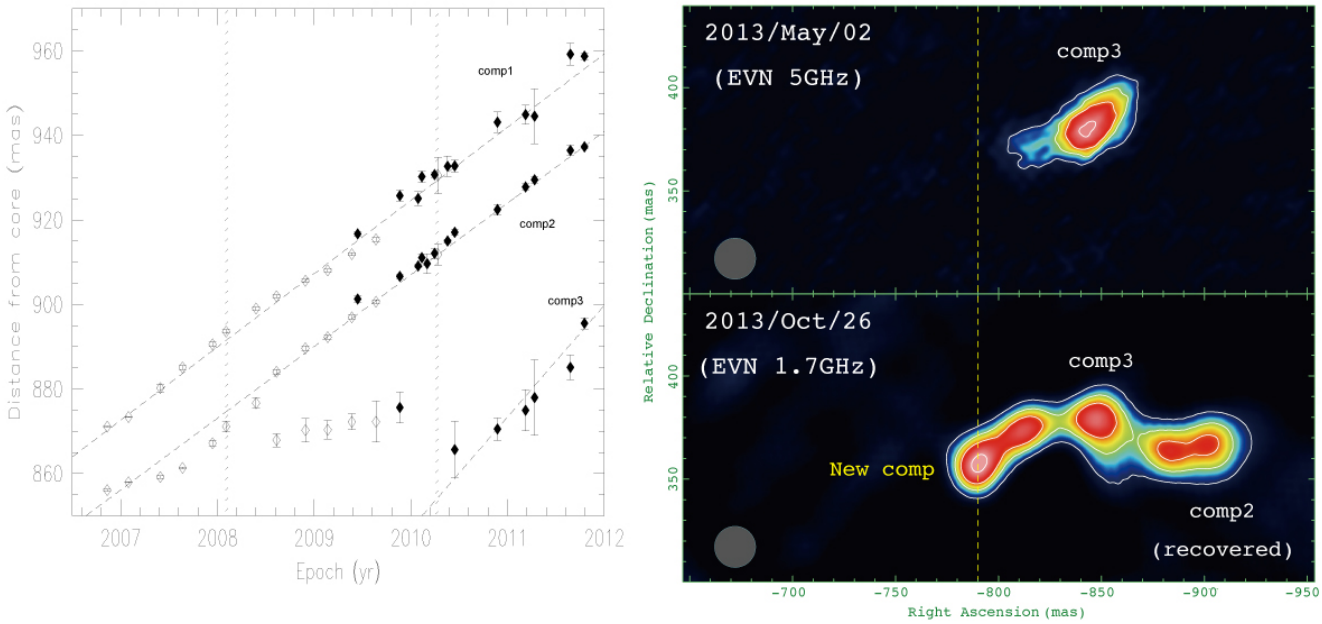


Figure 2. : (Left) Radial motions of the resolved HST-1 sub-components. (Right) Recent HST-1 images with EVN at 5GHz in May 2013 and at 1.7GHz in October 2013.

Since mid-2009, we have been conducting an intensive monitoring of the M87 jet with e-EVN at 5GHz, especially to examine the detailed structural evolution of HST-1 and its possible connection to gamma-ray activities. The project already provided a lot of interesting results on HST-1 such as (i) the mas-scale imaging of the structure, where the HST-1 complex was resolved into several subcomponents; (ii) a robust determination the proper motions for these subcomponents, where many of them are traveling superluminally (~4c); and (iii) the discovery of the emergence of a new superluminal feature from the upstream edge of HST-1, which coincided with the large TeV flare in 2010. These results indeed suggest that HST-1 (especially the upstream edge) might be associated with the gamma-ray production (Giroletti et al. 2012; Figure 2, left).

While the 5GHz campaign has been successful, the recent HST-1 brightness at this frequency was constantly decreasing. The project then shifted to 1.7 GHz from the recent session in October 2013 to improve the chance of detection. A good example of our preliminary analysis is shown in Figure 2, right. We successfully recovered

the fainter (downstream) component that was missed in the last 5GHz session. Moreover, we again discovered the sudden emergence of a new component at the upstream edge of HST-1. It is also interesting to note that the current HST-1 complex becomes significantly wider (~ double) than that seen in any previous epochs, implying that the actual underlying "channel" around HST-1 may be more extended than previously thought.

These findings demonstrate that the use of EVN 1.7GHz is indeed powerful to probe the current weak, extended status of HST-1. The upcoming 1.7GHz session, where the eMERLIN will also participate, will enable us to reveal the entire HST-1 structure in more detail.

Reference:
Giroletti, M., Hada, K., Giovannini, G., et al., 2012, A&A, 538, L10

K. Hada, M. Giroletti, G. Giovannini, C. Casadio, M. Beilicke, A. Cesarini, C.C. Cheung8, A. Doi, H. Krawczynski, M. Kino, N.P. Lee, and H. Nagai

EVN/JIVE Technical Developments

Going truly global

Global VLBI, connecting various VLBI networks in a single observation, has long been recognised as the way to extend our baselines to the far limit of what can be achieved on Earth, and to improve the uv-coverages of our otherwise sparse arrays. This is especially true for sources that are located in the Southern hemisphere with moderately low declination, and therefore only visible by the EVN for a short time (except for Hartebeesthoek). To alleviate this problem it seems natural to include additional Southern telescopes in the observation, like the Long Baseline Array (LBA) in Australia. There have been examples in the past demonstrating this option, but rather rare. Fomalont et al. (2001a,b) observed Sco X-1 (declination -15 degrees) continuously for 56 hours in 1999, using the VLBA, EVN, the LBA (then referred to as the Asian-Pacific Telescope) and additional telescopes. These data lead to the claim that besides the mildly relativistic outflow observed in this X-ray binary system, there is a highly relativistic flow of energy connecting the core and the radio lobes. These observations did not combine baselines between Europe and Australia yet, just demonstrated the advantages of continuous VLBI monitoring of sources that vary on a short timescale.

The first attempt to truly combine EVN and LBA telescopes (and in fact telescopes in Australia, China, Europe, Japan, as well as North- and South-America) in a real-time e-VLBI experiment was done during the demo at the opening ceremony of the International Year of Astronomy on 2009 (see EVN Newsletter 22, http://www.oan.es/evnnews/evnnews22.html).

Following this successful demo, a user experiment was proposed to observe PMN J0948+0022 that belongs to the rare class of radio-loud narrow line Seyfert 1 galaxies, and was also detected in gamma-rays by Fermi. These 22 GHz e-VLBI observations, with a maximum baseline length of 12 458 km confirmed the existence of a relativistic jet in PMN J0948+0022, similarly to flat-spectrum radio quasars (Giroletti et al. 2011).

The EVN invites observing proposals that would further exploit the unique capabilities of joint observations with LBA telescopes. The proposals will have to be submitted to both the EVN and the LBA programme committees. Please note that the joint visibility is however very short, and additional self-calibration will be needed to calibrate data taken at very low elevations, therefore phase-referencing on baselines between Europe and Australia will not be possible. On the other hand, the N-S baselines between China and Australia will complement greatly the largely E-W European-Chinese baselines, and with the addition of the short European-Australian uv-tracks this will provide a unique uv-coverage for sources within about +-15 declination. The plot in Figure 3 shows the UV coverage on 0528+134 after 19 hours of observing, with EVN-only baselines in blue, EVN+LBA and LBA-only in red.

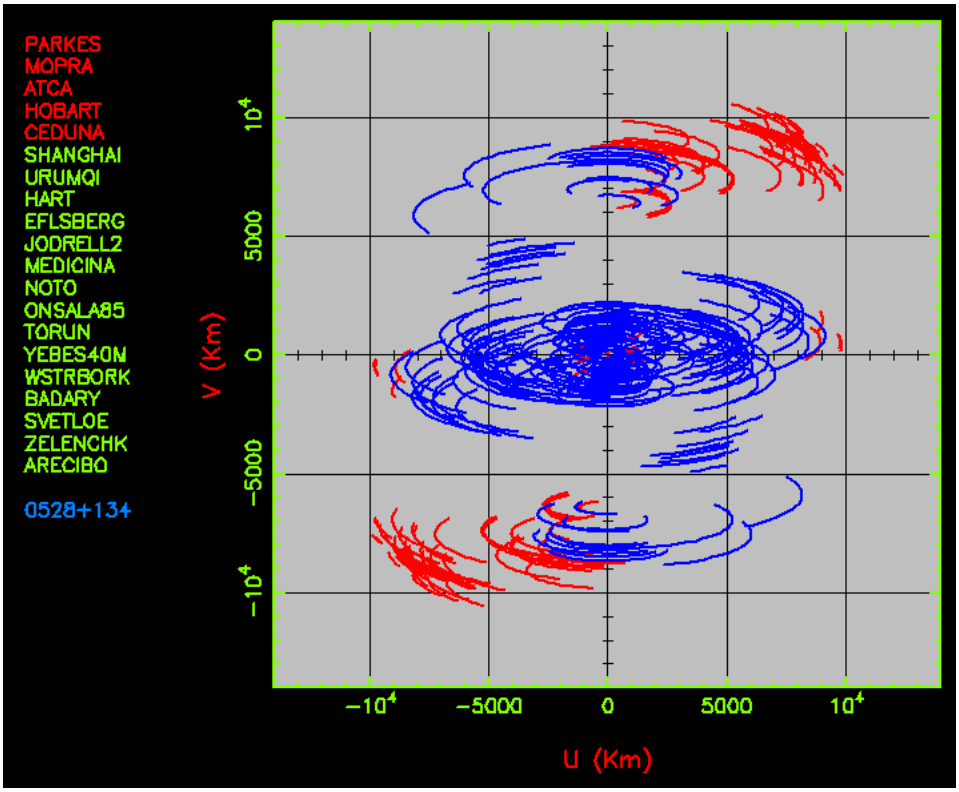


Figure 3 The uv-coverage of a combined EVN and LBA observing run on 0528+134. The baselines which include the LBA antennas are shown in red color.

EVN+LBA observations should be able to use all principal EVN wavebands from 21 cm to 1.3 cm (http://www.evlbi.org/user_guide/freq_cov.html).

References:

Fomalont, E. B., Geldzahler, B. J., Bradshaw, C. F., 2001a, Astrophys. J., 553, L27
Fomalont, E. B., Geldzahler, B. J., Bradshaw, C. F., 2001b, Astrophys. J., 558, 283
Giroletti, M., Paragi, Z., Bignall, H. et al., 2011, Astron. Astrophys., 528, L11

Zsolt Paragi, Arpad Szomoru, JIVE, Dwingeloo, The Netherlands

EVN Schedulers Report

A brief summary of the observing performance, resources, and logistical aspects of the February 2014 EVN Session and the e-VLBI observations is given below.

2014 Session 1: 20 February – 11 March

Wavelengths: 18, 5, 6, 1.3cm
Number of different user experiments observed: 14
Session Duration: 19.2 days Efficiency: 49.5%
Breakdown of observations by type and correlator.
TBYTES indicates the estimated disk usage (in TB) at EVN telescopes.

feb14	N-OBS	HOURS	DAYS	T-BYTES
TOTAL	36	218.5	9.5	778.6
EVN-only	21	162.0	7.0	679.8
Global	3	22.5	1.0	44.4
Short Obs.	0	0.0	0.0	0.0
Tests	12	34.0	1.5	54.4
EVN Correlator	29	176.0	7.3	760.1
Bonn Correlator	1	11.5	0.5	18.5
VLBA Correlator	0	0.0	0.0	0.0
eEVN Correlator	2	21.0	0.9	0.0
Other Correlator	0	0.0	0.0	0.0
CAL-only	4	18.0	0.8	0.0
MERLIN	4			
Arecibo	0			
VLBA	0			
GBT	0			
VLA	0			
Robledo	1			
Goldstone	0			
RadioAstron	1			

2013/2014 e-VLBI Observations

				e-VLBI PROPOSAL TYPE				
RUN	DATE	WTH	HRS	Normal	Short	Disk	ToO	Trigger
13e08	08OCT13	18cm	12	2	0	-	-	0 sched 0 trig
13e09	12NOV13	6cm	18	0	0	-	2	1 sched 0 trig
13e10	03DEC13	6cm	24	3	0	-	-	2 sched 0 trig
14e01	14JAN14	18cm	18	1	0	-	-	1 sched 0 trig
14e02	18FEB14	6cm	6	1	0	-	-	2 sched 0 trig
14e03	25MAR14	6cm	24	2	0	-	1	0 sched 0 trig
14e04	15APR14	18cm	18	1	0	-	-	0 sched 0 trig
14e05	28APR14	6cm	24	1	1	-	1	0 sched 0 trig

Alastair Gunn, EVN Scheduler, University of Manchester, UK

Reports from EVN Institutes

Fringes between KVN and ATCA at 43 and 86 GHz

On November 18 2013 ATCA extended into new territory to perform mm-VLBI observations with the Korean VLBI Network (KVN) at 43 and 86GHz. The 7900 km baseline between Australia and Korea provides resolutions of 80uas at the higher frequency. Figures 4 and 5 show the examples of fringe detections and visibility phases resulting from these observations.

This is the first true VLBI demonstration at mm frequencies with ATCA (as K band is 1.3cm) and ATCA will now be able to provide an important baseline for mm-VLBI observations in the Southern hemisphere.

The driver for these tests has been to provide simultaneous dual frequency mm-VLBI. Hitherto only the KVN has this important capability that allows the calibration at a lower frequency be used for the observations at the higher and more challenging frequency. Simultaneous dual frequency observations make possible astrometric VLBI at these very high frequencies and resolutions, where we expect exciting details, such as the structures (such as, perhaps, shadows) around Black Holes, to be revealed. These detections between ATCA and KVN were done observing at one single frequency and then the other, but ATCA has recently tested its capability of simultaneously recording one frequency from one set of antennas and one frequency from another in real time fringe tests to Mopra.

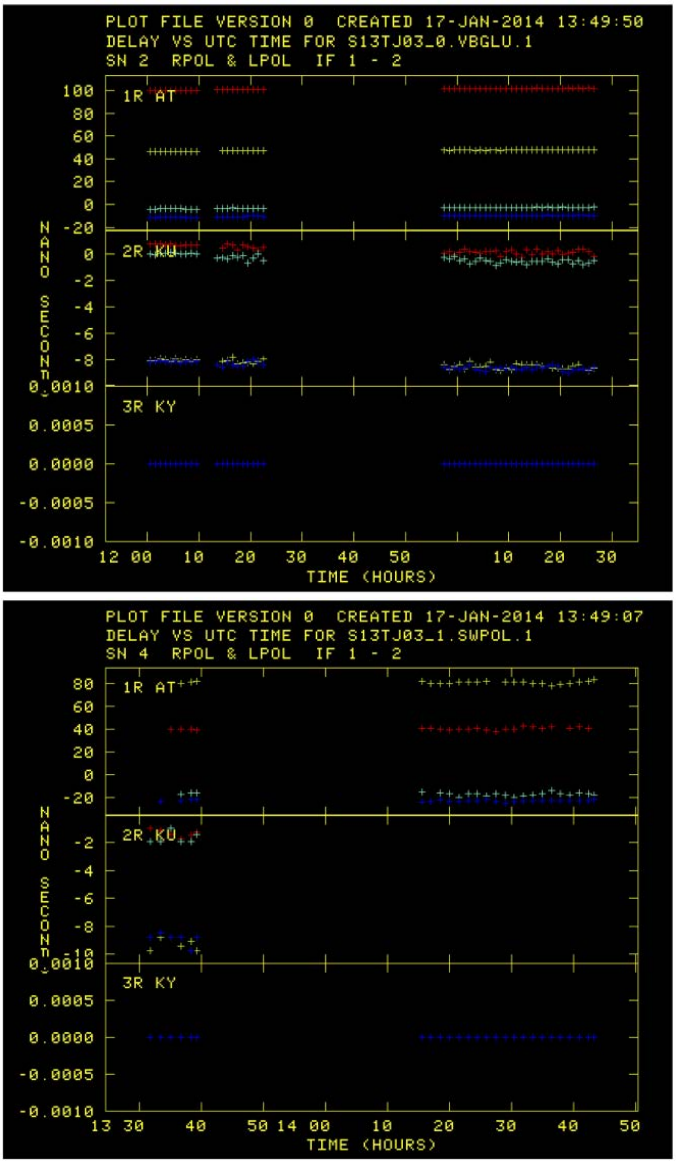


Figure 4. Fringe detections between the KVN and ATCA antennas at 43 GHz and 86 GHz for 2 polarisations and 2 64MHz IFs

The Korea Astronomy and Space Science Institute has recently awarded funding to explore the development of a network of telescopes with similar capabilities, targets being VERA (22/43GHz), ATCA (22/43/86GHz), Yebes (22/43/86/129GHz) and Mauna Kea (22/43/86GHz). ATCA has already delivered the first milestone in this project!

We look forward to the future results on simultaneous frequency, global, mm-VLBI between Australia and Korea

Richard Dodson, Taehyun Jung, Jamie Stevens, Bong Won Sohn, and Maria Rioja (KASI, Daejeon, Korea)

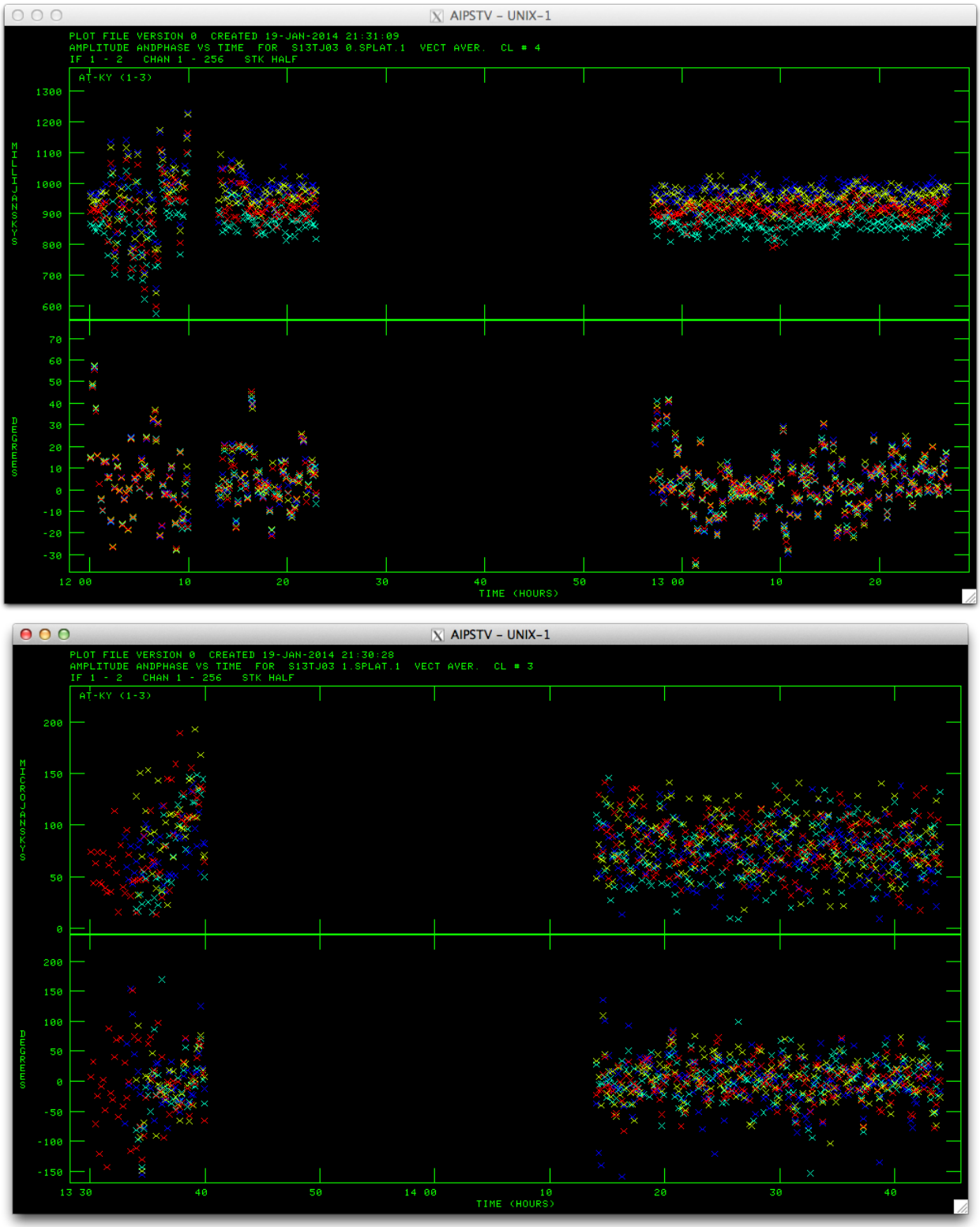


Figure 5. Phases on the ATCA – Yonsei baseline at 43 and 86 GHz.

Miscellaneous

The 12th EVN Symposium

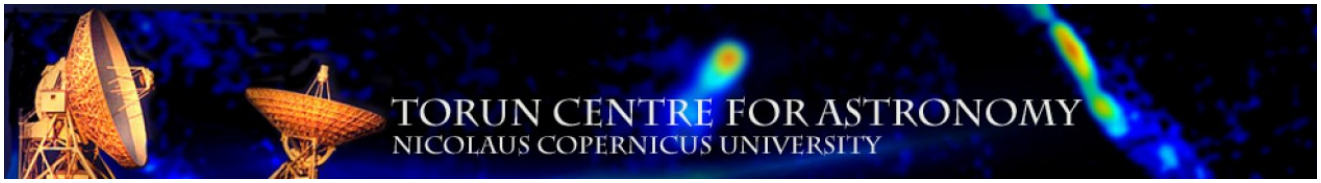
The Istituto di Radio-astronomia (IRA) and the Osservatorio Astronomico di Cagliari (OAC) of the Istituto Nazionale di Astrofisica (INAF), on behalf of the European VLBI Consortium, will host the 12th European VLBI Network Symposium and EVN Users Meeting from October 7th to 10th, 2014. Principal sponsors of the event are RadioNet3 and INAF. The Symposium will be held in Cagliari, on the South coast of the island of Sardinia. At this conference the latest scientific results and technical developments from VLBI, and, in particular, e-VLBI and space-VLBI (RadioAstron) results will be reported. The timing of this meeting coincides with the first successful observational tests of the Sardinia Radio Telescopes within the EVN, and with a number of results from new and upgraded radio facilities around the globe, such as e-MERLIN, ALMA, and the SKA pathfinders. This meeting will also incorporate the EVN Users meeting.

Further details about the Symposium are available on the conference website:
http://evn2014.oa-cagliari.inaf.it/EVN2014/

The Due to the capacity of the conference room, the number of participants will be limited to about 110 people. There is a limited budget for support, primarily intended for Ph.D. students and postdocs. Applications for the support should be indicated in the registration form and further outlined in an email to the LOC (loc-evn2014@oa-cagliari.inaf.it). The deadline for applications for the financial support is on June 10.

The email should contain the applicant's current status (Ph.D. student or postdoc) and a brief description of the research topic and type of presentation proposed for the symposium For Ph.D. students requiring an invitation to apply for a VISA, also a presentation letter from the supervisor is required.

YERAC-2014: The 44th Young European Radio Astronomers Conference



Started in 1968 in Meudon, the series of Young European Radio Astronomers Conferences (YERAC) will hold its 44th meeting on 8 – 12 September 2014. This meeting will be hosted by the Toruń Centre for Astronomy at the Nicolaus Copernicus University. Registration for the meeting is open until June 30 at http://yerac2014.astro.uni.torun.pl/. The conference is open for PhD students and young scientists at early stages of their career. Prospective participants must be nominated by their supervisors/directors of institutes who should provide a supporting letter for their candidate(s). More information on the registration process is available at the conference website. A dedicated website at www.yerac.org contains links and historic information about earlier YERAC meetings.

Future and Recent Meetings

There is a number of astronomical conferences and workshops to be held in 2014 which are relevant to presenting and discussing scientific, methodological and technical aspects of the EVN and VLBI in general. Listed below is a subset of such meetings.

20 June – 4 July: The European Week of Astronomy and Space Science (EWASS) will take place in Geneva, with two special events (symposia) dedicated to exploring the low-frequency radio sky in the SKA era and to millimeter and sub-millimeter astronomy in the ALMA era.

2-10 August: The 40th COSPAR Scientific Assembly and Associated Events will be organized in Moscow where the results from the early science and key science programs of RadioAstron will be discussed in a two-day symposium "The Sharpest View of Radio Universe – Results from RadioAstron (Spektr-R) Mission".

16-23 August: The 31st URSI General Assembly and Science Symposium will be held in Bejing, with a number of invited talks and special sessions addressing key results from radio astronomical studies and discussing recent developments in radio astronomical and radio physical techniques and instrumentation. The session on radio astronomical research (URSI Commission J) will be specifically focused on topics of polarization and magnetic fields; observing the mm and Sub-mm Universe; probing the hydrogen Universe; correlation, calibration, and imaging across all wavelengths; Solar radio emission; time-domain radio astronomy; antennas, detectors and receivers for new generation radio telescopes.