European VLBI Network Newsletter Number 23 May 2009

Contents

1. Message from the EVN Chairman

On 3-5 April 2009 the EVN organized e-VLBI demo observations in the frame of the event "100 Hours of Astronomy", a cornerstone project of the International Year of Astronomy 2009. Fourteen stations participated in the observations: Arecibo, Cambridge, Effelsberg, Hobart, JB2, Medicina, Metsahovi, Mopra, Onsala, Sheshan, TIGO, Torun, Westerbork, and Yebes. The data from these individual stations were transferred to the EVN correlator in JIVE to be processed in real time. **This was a extremely nice illustration of the current potential of the e-EVN array.** I would like to thank all the staffs at the participating stations and at JIVE for making possible such a nice demonstration. Thanks also to JIVE's director, Huib van Langevelde, who gave an excellent live talk from the NEMO science centre in Amsterdam.

In fact, at the occasion of the "100 Hours of Astronomy", **the Yebes 40-m dish obtained its first e-VLBI fringes** by using the new 1 Gbps connection to GEANT2 installed at the observatory in the frame of the FP6 EXPReS project. This is an important milestone both for the EVN and the Yebes observatory.

The EXPReS team is organizing now the **8th International e-VLBI workshop on Science and Technology of Long Baseline Real-Time Interferometry**. This workshop will be held in Madrid on June 22-26, 2009. More than 80 participants have already registered at the conference website. I'm confident this will be a very exciting meeting since it will bring together most scientific and technical aspects of e-VLBI.

This Newsletter contains some exciting scientific results obtained with the EVN, in this case mostly on extragalactic Astronomy. As these results show, **our Network is providing astronomers with a very detailed view of some of the most energetic phenomena in the universe**.

At the time of writing these lines, **the news coming from the development of the European digital BBC's is very good**. A spin-off company has been put in place to commercialize these devices that should form part of most EVN stations in the near future.

The EVN Board of Directors will meet at Onsala in May 26-27. We all look forward to a friendly and positive meeting, as it is usual for the group. At this meeting, in addition to discuss about the policy, operations, and technical developments of the array, we also plan to discuss with our colleagues from China and Russia in view of the possible strengthening in the collaboration with the stations of

Kumming and Miyun (China) and with the KVASAR network (Russia).

After two years of serving as the Chairman of the Consortium Board of Directors, my mandate will arrive at his end at the next meeting in Onsala. I am pleased to announce that the board will propose **Andrzej Kus, director of CfA (Torun), as new Chairman of the CBD.** Andrzej has a long experience in VLBI and has been serving in the EVN CBD from the creation of the network. I send my best wishes to him for the nice task of leading this enthusiast consortium.

Rafael Bachiller (OAN, Spain), Chairman of the EVN Board of Directors.

2. Call for EVN Proposals - Deadline June 1st 2009

ALL EVN, GLOBAL, and e-VLBI PROPOSALS must now be submitted with the ONLINE PROPOSAL SUBMISSION tool Northstar.
Email submission is no longer accepted

Detailed Call for Proposals

(This text is also available on the web at http://www.ira.inaf.it/evn_doc/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 is open to all astronomers. **Use of the Network by astronomers not specialized 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.

Standard EVN Observing Sessions in 2009 (disk recording)

2009 Session 3	Oct 22 – Nov 12	18/21cm, 1.3cm, 6cm, 5cm, 7mm, …
2010 Session 1	Feb 1 – Mar 18	18/21cm, 6cm, …

The dates for Session 1 2010 are still provisional.

Proposals received by 1 June 2009 will be considered for scheduling in Session 3, 2009 or later. Finalization of the planned observing wavelengths will depend on proposal pressure. 3.6cm observations may also be scheduled in Session 3 2009.

e-VLBI Observing Sessions in 2009 (real-time)

2009 Aug 27 – Aug 28 (start at 13 UTC)	18/21cm, 6cm, 5cm, 1.3cm
2009 Sep 10 – Sep 11 (start at 13 UTC)	18/21cm, 6cm, 5cm, 1.3cm
2009 Oct 15 – Oct 16 (start at 13 UTC)	18/21cm, 6cm, 5cm, 1.3cm
2009 Nov 19 – Nov 20 (start at 13 UTC)	18/21cm, 6cm, 5cm, 1.3cm
2009 Dec 01 – Dec 02 (start at 13 UTC)	18/21cm, 6cm, 5cm, 1.3cm
2009 Dec 10 – Dec 11 (start at 13 UTC)	18/21cm, 6cm, 5cm, 1.3cm

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

There are three e-VLBI observation classes: general e-VLBI proposals; triggered e-VLBI proposals; short observations. General and triggered e-VLBI proposals must be submitted by the June 1st deadline to be considered for scheduling in the above e-VLBI sessions starting from August 2009.

Requests for short observations (up to two hours) may be submitted up to three weeks prior to any e-VLBI session.

Continuum and spectral line observations can be carried out.
See http://www.ira.inaf.it/evn_doc/guidelines.html for details concerning the e-VLBI observation classes and the observing modes.

Features for the next regular EVN and e-VLBI sessions

- Ef may not be available during the day in the August and September run. Shanghai will be available only after 18:00 UT in the October run. Yebes 40-m is now participating in eVLBI sessions up to 512 Mbps at 6 and 1.3cm.
  Please consult http://www.evlbi.org/evlbi/e-vlbi_status.html for the current e-VLBI array and for the availability of different eVLBI stations per observing band and for the dates of the e-VLBI observing sessions.

- Yebes 40-m is now part of the regular EVN sessions at 5/6cm, 1.3cm and at S/X.

- MERLIN is normally available for joint EVN+MERLIN observations in all standard sessions, for any EVN wavelengths which

MERLIN supports (18/21cm, 6/5cm, 1.3cm). However, due to the e-MERLIN construction only an incomplete MERLIN array will be available in 2009 due to limited resources. For updated information please consult the web at http://www.merlin.ac.uk//evn+merlin.html

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.

How to submit

All EVN, Global and e-VLBI proposals (except ToO proposals) must be submitted using the on-line proposal submission tool Northstar. Global proposals will be forwarded to NRAO automatically and do not need to be submitted to NRAO separately.
To use Northstar, people should register (at http://proposal.jive.nl, only for the first proposal submission), enter the information about the investigators and the technical specifications of the proposed observations (equivalent to that previously in the coversheet) using the on-line forms, and upload a scientific justification in pdf or ps format. The scientific justification should be limited to 2 pages in length. Up to 2 additional pages with diagrams may be included. The deadline for submission is 23:59:59 UTC on 1 June 2009.

Additional information

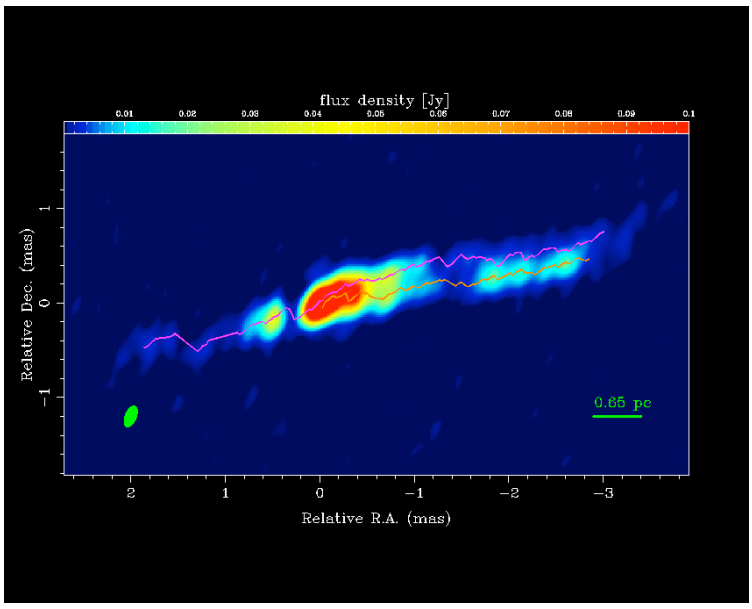
Further information on Global VLBI, EVN+MERLIN and e-VLBI observations, and guidelines for proposal submission are available at: http://www.ira.inaf.it/evn_doc/guidelines.html
The EVN User Guide (http://www.evlbi.org/user_guide/user_guide.html) describes the network and provides general information on 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-VLBI 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.

Tiziana Venturi - Chairperson of the EVN Program Committee

3. EVN Scientific Highlights

Resolving the jet in Cygnus A

Cygnus A is the closest (z=0.057) strong FRII radio galaxy and therefore a key object for detailed studies of its prominent double sided jet and nucleus. Owing to the large inclination of the jet with respect to the observer (>75 deg), and correspondingly reduced relativistic effects, Cyg A is an ideal candidate for detailed studies of its jet physics, which is thought to be similar to those in the more luminous quasars.
Our previous studies revealed a good kinematic model for the jet of Cygnus A, but the counter-jet speed is still not well constrained. The central engine and part of the counter-jet of Cyg A are likely to be obscured by free-free absorbing material, presumably a thick torus. Because at mm-wavelengths, the absorber becomes optically thin we started to monitor Cyg A with global VLBI at 43 GHz in October 2007. To obtain the highest possible sensitivity and resolution a global VLBI array of 15 antennas, including the VLBA, GBT, VLA1, Effelsberg, Onsala, and Noto, at 43 GHz with a recording rate of 512 Mbps is used to image Cygnus A on four successive epochs separated by about 8 month. The data from first two epochs were correlated at JIVE. The image of Cygnus A reveals a previously unseen gap between both jets (see Figure). This could either indicate the emergence of a new counter-jet component that is slowly separating or we start to see the very inner acceleration region of the jet which is not efficiently radiating at radio wavelengths. Another alternative could be that the gap is caused by some absorbing material, e.g. a dense sub-pc size torus surrounding the nucleus. Analysis of the second epoch from October 2008 is in progress and will show whether the gap shows any time evolution or if it is a stationary feature. Further more the image above shows transversely resolved jet structures at distances beyond ~0.5pc (see Figure).

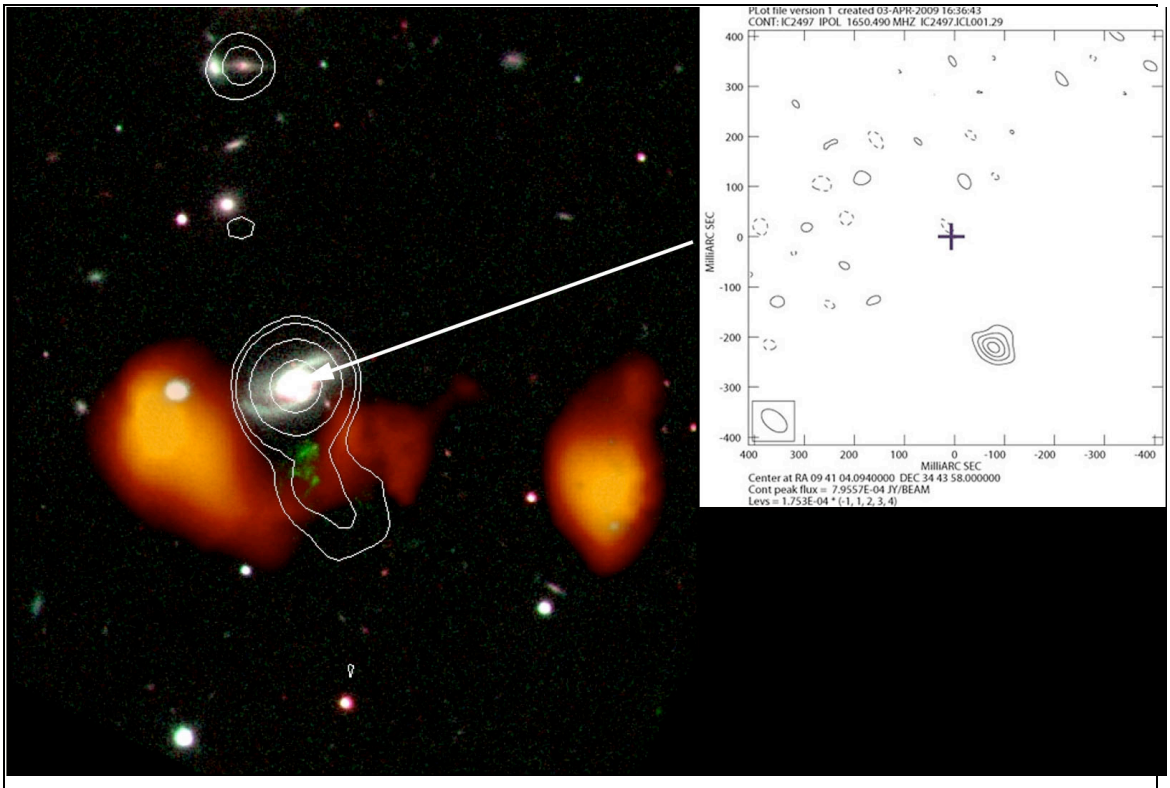


Analysis of the resolved jet structure shows that the initially wide jet (opening angle ~10deg) collimates within the first parsec into an edge-brightened jet with an opening angle of ~3deg. For more details see also PoS(IX EVN Symposium)108 at http://pos.sissa.it/cgi-bin/reader/conf.cgi?confid=72.
Authors: U. Bach (1), T.P. Krichbaum (1), E. Middelberg (2), W. Alef (1), J.A. Zensus (1)
((1) MPIfR, Bonn, Germany, (2) Astronomisches Institut - Ruhr Unsiversität, Bochum, Germany)

Hanny's Voorwerp: Discovery of an AGN at the core of the disk galaxy IC2497

Dutch school teacher, Hanny van Arkel, discovered what is surely one of the most bizarre objects uncovered via the GalaxyZoo.org morphological census (Lintott et al. 2008, . Jozsa, Garrett & Osterloo et al. 2009), SDSS J094103.80+344334.2. This object, now known as "Hanny's Voorwerp", appears as an irregular cloud located 15 – 25 kpc in projection from the massive disk galaxy IC 2497 (see Figure 1, Jozsa, Garrett et al. 2009) and has a redshift matching with the galaxy (Vsys = 15056 ± 40 km/s, taken from the NASA Extragalactic Database NED) to within 300 km/s (Lintott et al. 2009).
This object is highly ionised and has a spectrum dominated by emission lines, particularly [O III] (Lintott et al 2009). What is most peculiar is that X-ray observations carried out by the Swift satellite, have not indicated any ionisation source in the galaxy or the object (Lintott et al 2009). With this, only two possible hypotheses are left. Ether an AGN exists in IC 2497 and is heavily obscured but sill able to ionise the Voorwerp or else the ionising source is no longer present and the Voorwerp is the result of a light echo being seen from an AGN that has "turned off" (Lintott et al 2009).
To determine which of these scenarios is most likely responsible for the Voorwerp, we observed IC 2497 with the e-VLBI on September 30, 2008. The e-VLBI observations were conducted by the European VLBI Network (EVN) at 1.650 GHz. The array included the Westerbork, Medicina, Onsala 25-m, Torun, Effelsberg, Jodrell Bank MkII, and Darnhall telescopes. The observing bandwidth was 64 MHz in both LCP and RCP and 2-bit sampling was employed, resulting in a total data rate of 512 Mbps for each telescope. The total observing time was approximately 2 hours from UT 12:06:23 to 14:18:17 of which approximately 1.5 hours were "on-source". For the observations, the target was phase-referenced to J0945+3534, a VLBA calibrator located ~ 1.3 degrees away from the target source (IC2497). A phase-referencing cycle time of 7 minutes was employed of which 5 minutes was spent on the target.

During the editing, imaging and calibration process, it was found necessary to discard the Jodrell Bank - Darnhall baseline, probably due to correlated interference. The calibration solutions derived from J0945+3534 (including phase and amplitude corrections obtained by hybrid mapping the source) were then applied to the IC2497 data. Using natural weighting, a compact radio source at the centre of IC2497 was clearly detected from the phase calibrated data set.
The e-VLBI image of IC2497 is shown in the Figure. A compact source was detected at a position of RA 09 41 04.087 and Dec. 34 43 57.778 (J2000). This observed position is offset by approximately 135 milliarcseconds to the south west of the VLA FIRST source (R.A. 09 41 04.094 Dec. +34 43 58.000 (J2000)). This offset represents a shift of approximately 1/50th of the VLA synthesised beam. The source appears marginally resolved in the VLBI map but this may be due to residual phase errors after phase referencing. The total integrated flux density measured is 1.0934E-03 ± 1.31E-04 Jy, which represents only 6% of the total VLA First flux density measurement (16.83 mJy). Measurements of the size of the VLBI component using IMFIT suggest the size is < 60 milliarcsecond. From this, we determine a limit on the brightness temperature of the source, Tb > 4E05 K.



Caption: *WSRT observations reveal a radio jet (white contours) emanating from the centre of the nearby galaxy IC 2497, headed straight in the direction of Hanny's Voorwerp (green). The observations also reveal a huge reservoir of hydrogen gas (coloured orange) that probably arose from a previous encounter between IC2497 and a group of galaxies that are now located due west of the*

Voorwerp. The e-VLBI observation (right) indicates the presence of an AGN at the centre of IC2497. The cross shows the VLA FIRST position, with respect to the e-VLBI detection. Credit: Main image left (Josza, Garrett & Oosterloo et al. 2009). Hanny's voorwerp (bottom right) Dan Herbert, Isaac Newton Telescope.

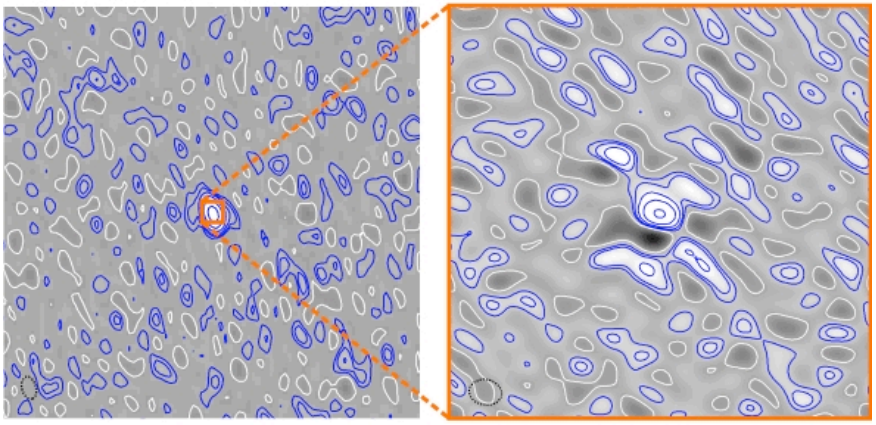
This strongly suggests that an obscured AGN is present within the core of IC2497. This, together with the WSRT detection of larger scale jet emission, suggests that the AGN is associated with a jet that clears a channel through the galaxy towards the Voorwerp (see Fig 1). This cleared channel permits the AGN to ionise the large reservoir of gas surrounding IC2497 and the result is Hanny's Voorwerp.

H. Rampadarath (JIVE & Leiden Univ), M.A. Garrett (ASTRON, Leiden Univ & Swinburne University), G.I.G Jozsa (ASTRON), T.A. Oosterloo (ASTRON & Univ. Groningen), Z. Paragi (JIVE).

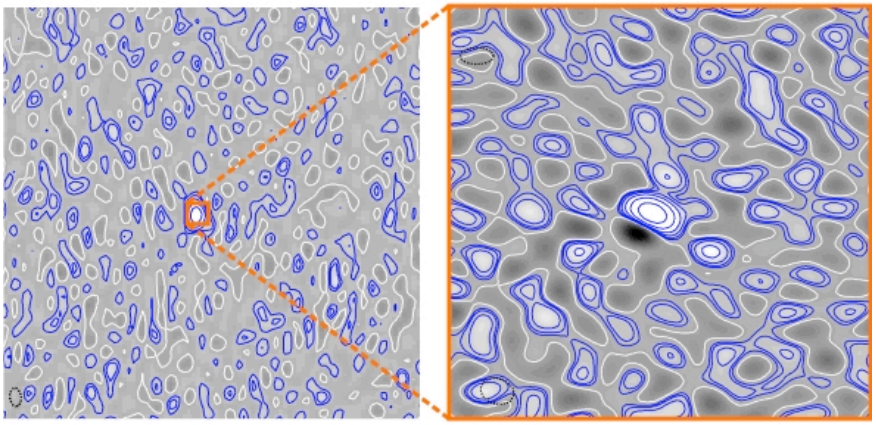
MERLIN/EVN 18cm observations of X-ray bright AGN

Coeval growth of the bulge and the central massive black hole of AGN is supposed to be regulated by fueling and feedback. The details of the underlying physics are still under debate. High angular resolution observations can shed light on the nuclear structure of AGN and can help disentangling the associated energy dynamics into nuclear and stellar components. We have therefore carried out MERLIN/EVN 18 cm observations of 13, $0.1 < z < 0.4$, X-ray bright AGN (cf., Zuther, Fischer, & Eckart 2008, JPhCS, 131). The sample, based on a cross-correlation between SDSS, ROSAT, and FIRST catalogs, consists of Seyfert 1, Narrow Line Seyfert 1, and LINER-like galaxies. The sources, which are radio intermediate, show no large scale radio jets. Despite a fraction of resolved radio emission of only a few percent (FIRST → MERLIN → EVN), we find that for almost all objects the radio emission is unresolved on ~500 pc scales for MERLIN and ~40 pc scales for EVN. On these scales the radio luminosities and brightness temperatures are too high for star formation to play an important role. The clear correlation of MERLIN/EVN radio fluxes with ROSAT X-ray fluxes, together with the compactness of the 18 cm emission, indicates that the radio emission of these sources is closely connected to processes that occur in the vicinity of the central massive black hole. Part of the sample is suitable for adaptive optics assisted near-infrared observations with natural guide stars, which will allow us to study the nuclear environment at scales similar or even better than that of MERLIN at L-band. With near-infrared spectral diagnostics we can investigate the impact of the nuclear radiation (X-ray, radio) on the surrounding environment and thereby search for signatures of feeding and feedback from the nucleus.

990487



990947



990515

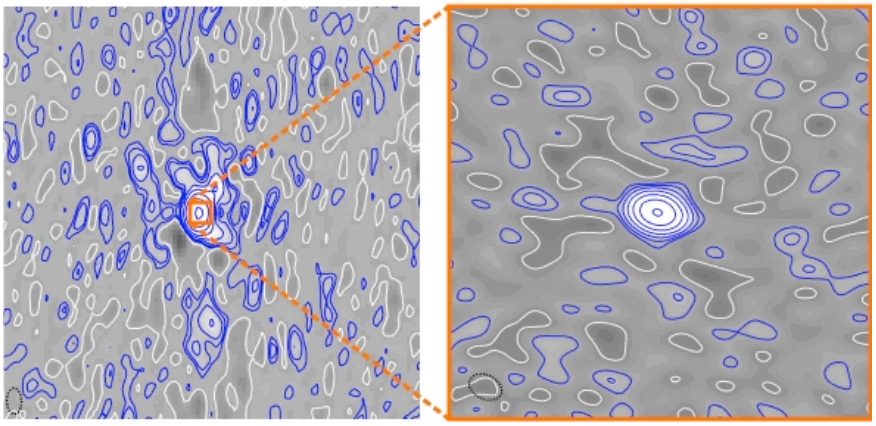


Figure caption: 18cm cleaned maps (preliminary) with MERLIN (left) and western EVN (right) of three targets of our sample. Contours refer to -1 (in white), 1, 2, 4, 8, 16, … (in blue) times the rms in the image (Zuther, Fischer, & Eckart in prep.). The beam sizes are indicated in the bottom left of the images. The image size is 4 x 4 arcsec2 and 0.2 x 0:2 arcsec2, respectively. North is up, East is left.

Jens Zuther, Sebastian Fischer, Andreas Eckart
I. Physikalisches Institut, Universität zu Köln

AGN activity at early cosmological epochs

Quasars at the highest redshift (z~5 or more) place strong constraints on the early cosmological evolution of active galactic nuclei (AGNs) and the growth of the supermassive black holes. The AGN activity observed at high z indicates that AGN feedback processes may have played an important role in the early galaxy and cluster evolution. The ultimate evidence for AGN jet activity is provided by VLBI observations. Our recent results for compact radio sources at z~6 (J0836+0054 and J1427+3312; see http://www.oan.es/evnnews/evnnews20.html#z6) indicate that there is a steep-spectrum population of the most distant radio AGNs.
Only eight radio quasars at z>4.5 have been studied with VLBI prior to our experiment. Our aim was to increase this sample, by selecting optical quasars at z>4.5 from the Sloan Digital Sky Survey (SDSS), unresolved (<5") in the VLA FIRST survey at 1.4 GHz, with total flux densities of ~10-30 mJy. Earlier experience with the EVN (see http://www.oan.es/evnnews/evnnews19.html#devos) taught us that these have a very good chance to be detected at mas scales in the radio. Indeed, we could successfully image all the five such SDSS/FIRST quasars we found and proposed. The EVN observations in experiment EF021 took place on 22 and 29 October 2008 (at 5 GHz and 1.6 GHz, respectively).
Although the sources are fairly compact, they are typically somewhat resolved and show mas-scale extended emission. Interestingly, for 4 out of 5 quasars, the radio spectrum of the innermost structure between 1.6 and 5 GHz is steep, with a spectral index of about -0.6. Note that we did not use any a-priori spectral information when selected this sample, in particular we did not pick up flat-spectrum quasars.
One of the quasars (J0813+3508, z=4.92) has a companion radio source ~7" away that is unresolved in FIRST. Since the ~10-mas scale inner jet revealed by our new 1.6-GHz image points towards its direction, and we measured excess flux density on the shortest VLBI baseline indicating some extended emission on ~0.1" scale, we

believe that the companion - which otherwise is resolved out with the EVN - is actually physically associated with the high-redshift quasar. If this is the case, the full angular extent of the source corresponds to ~45 kpc projected linear size.

S. Frey (FÖMI SGO, Hungary), Z. Paragi, L.I. Gurvits (JIVE, The Netherlands), K. Gabányi (FÖMI SGO, Hungary) and D. Cseh (Eötvös Univ., Hungary)

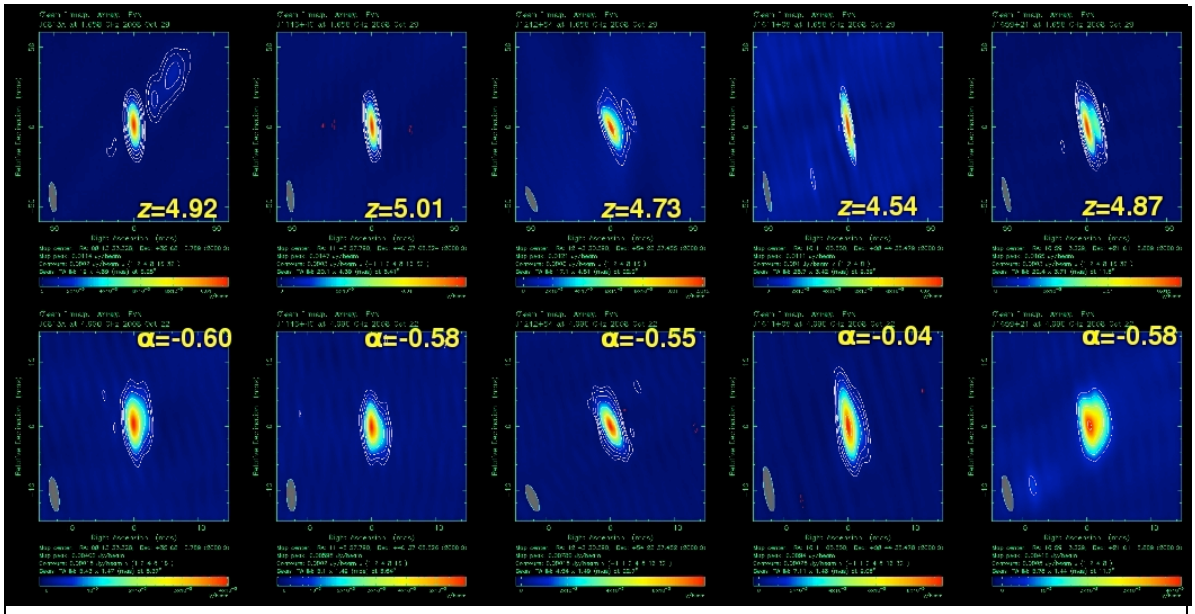
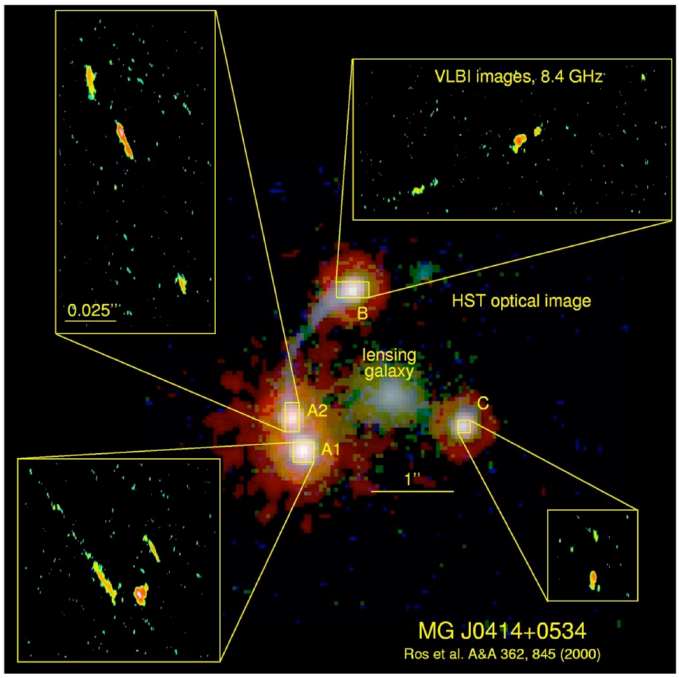
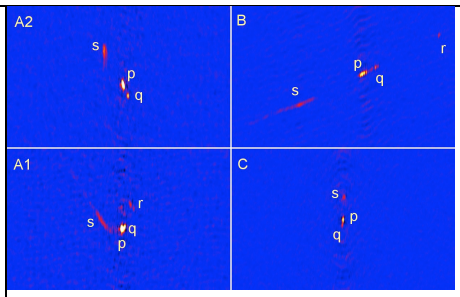


Figure caption: Phase-referenced EVN images of five z>4.5 quasars at 1.6 GHz (top row) and 5 GHz (bottom row). The sizes of the fields are 120 mas x 120 mas (1.6 GHz) and 30 mas x 30 mas (5 GHz). The typical restoring beam sizes are 20 mas x 4 mas (1.6 GHz) and 5 mas x 1.5 mas (5 GHz), elongated to the N-S direction. The peak brightenss values range from 11 to 17 mJy/beam (1.6 GHz) and 4 to 9 mJy/beam (5 GHz). The sources (from left to right): J0813+3508, J1146+4037, J1242+5422, J1611+0844 and J1659+2101.

VLBI study of the gravitational lens MG0414+0534

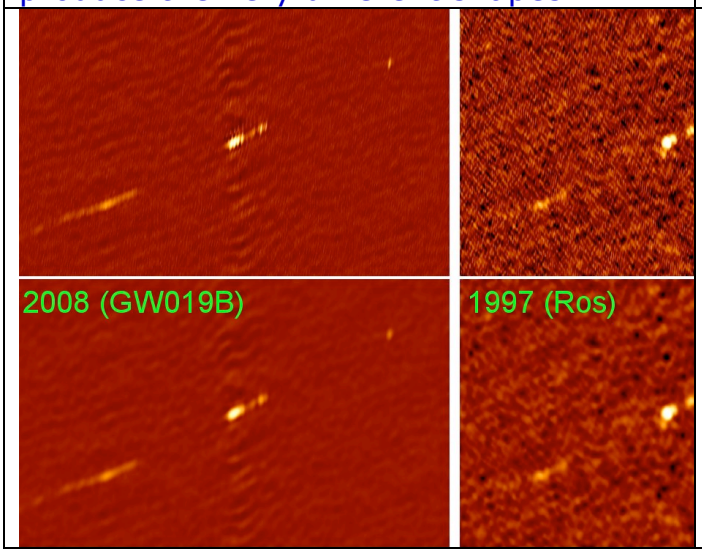
A large project to study the gravitational lens MG0414+0534 in detail is in progress. This source is a quadruple lens system in which a water maser at z=2.64 has recently been discovered (Impellizzeri et al. 2008). The observations involve >20 stations, many big dishes (Ef, GBT or phased VLA, Arecibo, Robledo, ...), high data rates, etc. It is a continuum imaging project that will provide input for very accurate mass modeling of the lens with LensClean. In part A (currently being analysed by Filomena Volino, in Bonn) was observed at 1.6 GHz to detect and map more extended emission, while part B at 8.4 GHz (see figures) provided higher resolution.





Composite image by Ros (2000) to give an overview of the system. This system in special in many ways. A1 and A2 have very high magnifications (~12), B still has a magnification of ~5. From theory one would generally expect that A1 and A2 are mirror images of each other. In this case the slightly different direction of the highest magnification conspires with the special source structure to produce the very different shapes.

Preliminary results of the observations: all four lensed images from the current project (GW019B).



Left images: current GW019b observations. Right: previous data from Eduardo Ros (1997). Top: full resolution. Bottom: convolved to about equal resolution.

Olaf Wucknitz (University of Bonn).

"100 hours of Astronomy": demonstration observations in IYA 2009

100 Hours of Astronomy, a cornerstone project of the International Year of Astronomy (IYA2009), took place 2-5 April 2009. Following on the success of the marathon, global e-VLBI observation for the IYA2009 Opening Ceremony in January, the EVN organized two e-VLBI runs on 3 and 5 April with the participation of 14 stations: Arecibo, Cambridge, Effelsberg, Hobart, Jb2, Medicina, Metsähovi, Mopra, Onsala, Sheshan, TIGO, Torun, Westerbork and Yebes. The observation were demonstrated live during a talk by Huib van Langevelde at the NEMO science centre in Amsterdam. Many thanks to all participating observatories who made these observations possible.

100 Hours of Astronomy also included "Around the World in 80 Telescopes," 24-hours of live webcasts from observatories around the world. The EVN was represented by an interview with Huib in the control room at JIVE, and the recorded webcast can be viewed online at http://www.ustream.tv/recorded/1336875.

The educational e-VLBI web site built by JIVE's Harro Verkouter for IYA2009 is still available at http://iya.expres-eu.org/

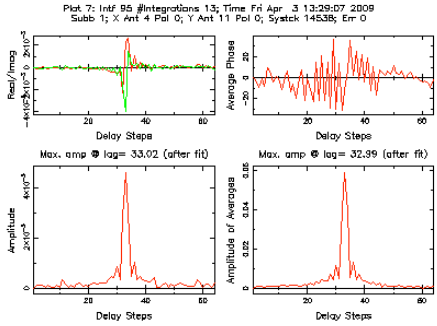
The EXPReS team

4. EVN Technical Development and Operations

First e-VLBI fringes of the IGN 40-m radio telescope in Yebes (Spain)

In the framework of the EC funded project "EXPReS" (http://www.expres-eu.org/), the observatory is connected to GEANT at 1 Gbps. First e-VLBI fringes were obtained with the e-EVN during the campaign "100 hrs of Astronomy", on April 3rd 2009.

Stations participating in the e-VLBI observations.



Example of real time fringes between Yebes and WSRT.

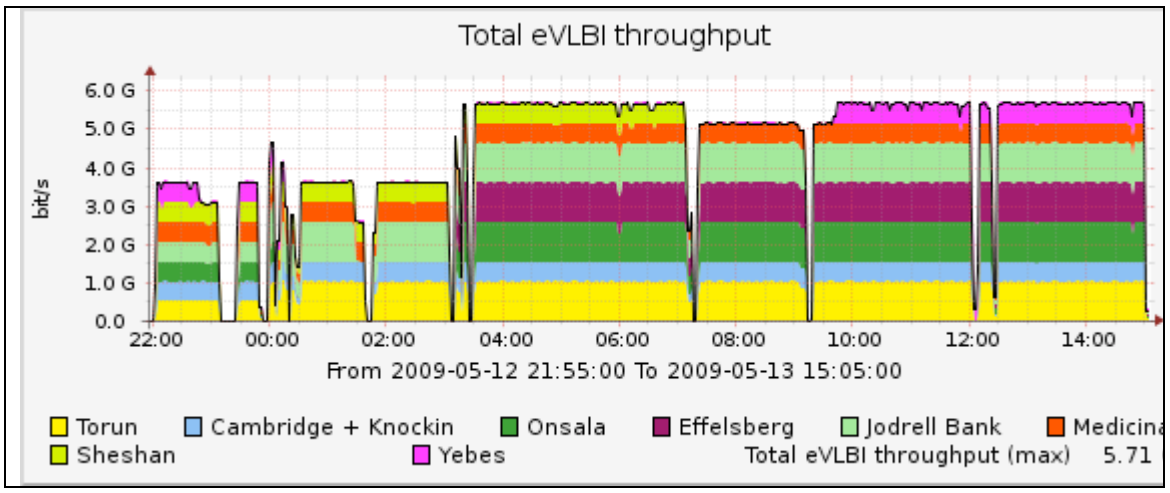
News from the e-EVN

The first half of 2009 has been very busy for the e-EVN. Most of the e-VLBI observing runs were fully packed with experiments, and we had a number of Target of Opportunity requests as well. The 40-m Yebes telescope joined the array during the "100 Hour of Astronomy" demo observations (see above), and it is now part of the regular e-VLBI array.

On 12-13 May 2008 there was a ToO project observed at 5 GHz which went very well. This was the first time that Jodrell Bank participated at a full 1024Mb/s, thanks to an upgrade of the Mark5 motherboard by Paul Burgess. The Mark5 in question now has 2 network interfaces of 1Gb/s each, and using the Linux round robin Ethernet bonding driver, the traffic can be distributed over both networking cards and both 1Gb/s fibers from JBO to JIVE, as 1024Mb/s of e-VLBI data does not fit in a single 1Gb/s fiber. There is a second Mark5 at Jodrell Bank, connected to their VLBA formatter, that receives data from multiple MERLIN outstations and transmits this data to JIVE as well. Both Cambridge and Knockin took part in the observation, generating another 512Mb/s of data for the network. With the 1024Mb/s from Jodrell Bank already taking up that much on each fiber, there initially did not seem enough capacity for this traffic. Paul Boven from JIVE then adapted the Linux round-robin bonding driver to distribute the

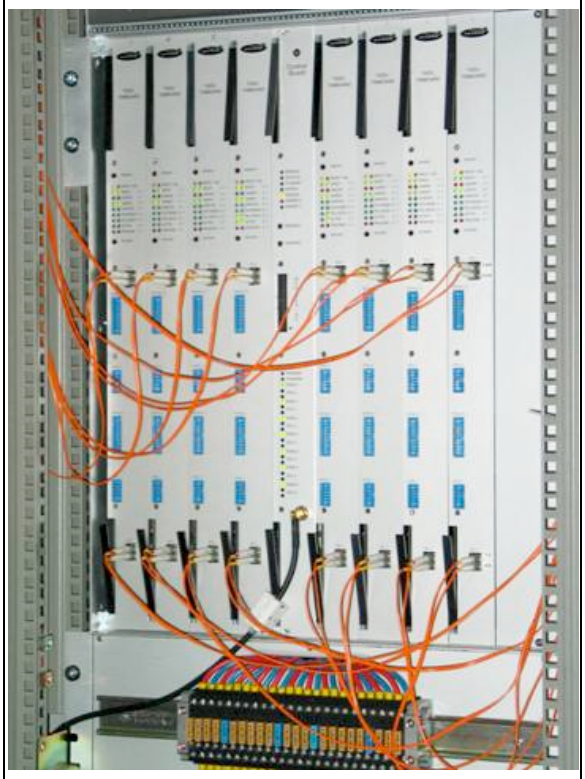
packets less evenly: by making Jodrell Bank send 4 out of every 5 packets over one fiber, there was enough spare capacity on the other fiber to add the two MERLIN telescopes. The data throughput graph for the experiment is shown below.
After the science run, several stations helped to test Bob Eldering's Domino implementation for e-VLBI with a Mark-5B. In this test, we detected real-time fringes for the first time from a Mark-5B equipped station (Yebes) connected to a Mark-5B at JIVE. Unfortunately, the Mark-5B IO board stops completely as soon as a single corrupted header frame is received. We are investigating workarounds for this issue to make this mode more robust.

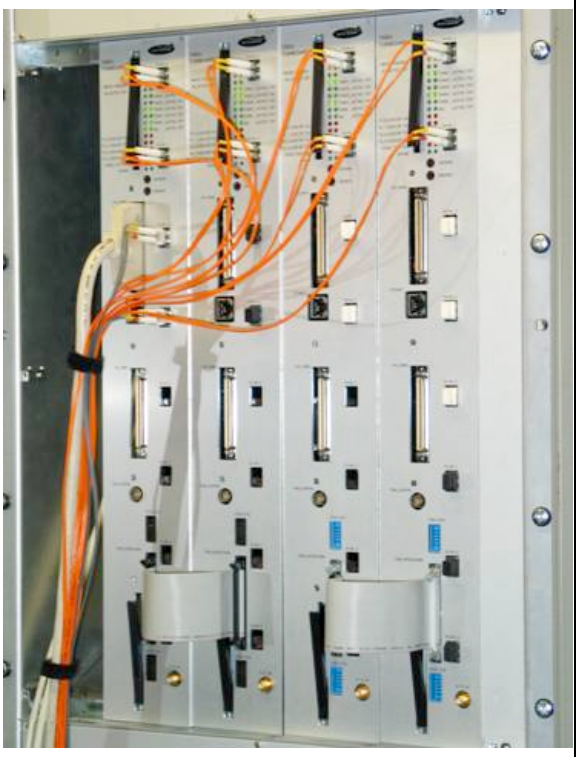
The EXPReS team



Technical News/Developments for the WSRT

After a period of commissioning in 2007-2008, from Session 2008/3, VLBI-operations in WSRT make full use of the new digital Tied Array Distribution Unit (TADUmax) system, which in combination with Mark5B recorder replaces the old analog adding system, the field system and the Mark5A recording system.
TADUmax has now been successfully used in two full EVN sessions as well as in a number of VLBI experiments. From EVN Session 2009/3, the TADUmax-Mark5B combination will also be used when a single dish is used (e.g. 5cm observations or when a wide field-of-view is required).
The Mark4 DAS and the Mark5A recorder will be decommissioned soon.





Rene Vermeulen (ASTRON)

Science and Technology of Long Baseline Real-Time Interferometry: The 8th International e-VLBI Workshop (Madrid, June 22nd-26th 2009)

In recent years real-time, long-baseline, radio interferometry over optical networks has developed from a technical possibility to a mature technique. Scientifically, real-time operation is more important for long baselines, with their high spatial resolution, than for short baselines. However, until recently the required technology has not been readily available. Technical advances and the explosive increase of connection capacity have now radically changed the situation. Emerging radio interferometers (e-MERLIN, E-LOFAR, e-EVN and other e-VLBI arrays) will exploit mixed private/shared networks to achieve wide-bandwidth real-time operation. Mirroring developments in other wavebands of astronomy, these new real-time radio instruments are being optimised to study transient phenomena. Moving data transport to fibre also gives the prospect of rapidly expanding observing bandwidth and sensitivity as network capacity continues to increase. Technically and operationally today's e-VLBI

instruments serve as precursors to the real-time Square Kilometer Array. Given recent developments the time seems ripe to bring all those working on the science and technology of real-time, long-baseline radio interferometry together to discuss the state-of-the-art and future prospects.
The conference will be held in Madrid (Spain) on June 22nd- 26th 2009. It will cover both scientific applications (first half) and technical implementation (second half) with joint sessions in the middle. The conference proceedings will be published electronically. Specific areas to be covered include:

- Scientific: Applications of real-time operation to astronomy, geodesy and other applications. How to best coordinate emerging e-VLBI arrays for best scientific return. Connections to transient monitoring in other wavebands including Fermi Gamma-Ray Space Telescope observations.
- Technical: e-VLBI test experiments, use of new long distance links, development in techniques including selective packet dropping and novel protocols, the search for higher bandwidths, network status and monitoring, distributed processing, and future development.
- Scientific/Technical: Future technical possibilities of interest in planning future instruments. Desired technical requirements to fulfill scientific goals, science priorities for development.

More than 80 participants have already signed up to attend!
Detailed information at http://www.oan.es/expres09/

Francisco Colomer, LOC Chairman.

EVN Scheduler's Report from the last observing session

2009 Session 1: 26 February - 19 March
Wavelengths: 6, 1.3, 18, 5, 0.7 cm

This was a full length session although, as often, days during the 5cm part were very unevenly filled since nearly all the methanol maser projects required the same GST range (Galactic Centre). There were only single user projects in the 1.3cm and 0.7cm part. There were 2 global projects, 3 observations involving Arecibo and 1 involving Robledo. MERLIN was used for some projects at both 6cm and 18cm. One project was correlated at the Bonn correlator and the rest at the EVN correlator at JIVE.

A total of 21 observations from 13 proposals were observed. Projects requiring MERLIN were given some scheduling priority as a number of MERLIN antennas will not be available in session II. Yebes took part for the first time in the 5cm part. The Yamaguchi (Japan) antenna

was also added to one of the 5cm projects. Again I thank the Onsala, Noto and Effelsberg observatories for permitting the scheduling of a 5th wavelength (7mm) in the session.

Recent eVLBI runs:

Date	λ	Duration	
22JAN09	18cm	21h	2 normal + 1 short
10FEB09	18cm	17h	2 normal proposals + 1 trigger proposal (not triggered)
21MAR09	6cm	15h	1 normal proposal + 1 trigger proposal (TRIGGERED !)
21APR09	18cm	24h	2 normal + 1 short + 1 ToO + 1 trigger proposal (not triggered)

Richard Porcas (EVN Scheduler)

5. EVN Staff matters

Staff changes at EVN institutes

Since October 2008, **Nicolas Pradel** is the "Friend of VLBI" for the WSRT (email: pradel@astron.nl).

EVN Newsletter No. 23. © 2009 European VLBI Network. Edited by Francisco Colomer (OAN, Spain).