EVN USERS MEETING

CAGLIARI 9 October 2014

Chairman: Tom Muxlow

AGENDA

1) *Introduction* - Tom Muxlow (EVNPC Chair)

2) *Correlator and Proposal Tool Updates* - Bob Campbell (JIVE)

3) *EVN Scheduling* - Alastair Gunn (EVN Scheduler)

4) *Open Discussion* - Miguel Perez-Torres (Motivator)

5) *Any Other Business*

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1 INTRODUCTION (Muxlow)
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a) EVNPC Update

Muxlow listed the current membership of the EVN PC (see presentation), noting a new observatory member (A. Melnikov from IAA St. Petersburg) and 2 new "at large" members (A. Bezzano from INAF-IAPS, Rome, and E. Humphreys, ESO). The new EVN Scheduler (from 2014) is Alastair Gunn. Michael Lindqvist will replace Tom Muxlow as EVNPC Chair from 1 January 2015.

b) Recent Additions to EVN Facilities

The Korean VLBI Network (KVN) became an Associate Member of the EVN in 2014, and its 3 x 21m telescopes at Yonsai, Ulsan and Tanma may be requested in EVN proposals at 1.3cm and 7mm.

The new Tianma 65m telescope near Shanghai will also be available for EVN observations from 2015 Session I. The "default" telescope will still be the Seshan 25m but proposers can request Tianma 65m in their

proposal, giving additional scientific justification.

Arrangements have been made to facilitate joint EVN observations together with the Australian LBA. The first opportunity will be observations in 2015 Session II (proposal needed to EVN at 1 Feb 2015 deadline AND to LBA at 15 December deadline). No proposals were received for 2015 Session I; Muxlow wondered why.

EVN Out-of-Session observations are now possible (maximum 144h per year). Proposers must give cogent reasons in their proposal why observing during advertized sessions is not possible.

Muxlow also mentioned a commensal survey of fast transients which will piggy-back on other observations at the correlator at JIVE. There are also plans to implement automatic (fast) trigger programs within e-VLBI runs, which could interrupt scheduled programs of lower priority.

c) Proposal statistics

Muxlow gave details of recent proposing statistics (2006 - 2014) noting the steady rise (in EVN disk proposals) in this period. There was some worry that proposal numbers have dropped at the last 2 deadlines.

2 CORRELATOR AND PROPOSAL TOOL UPDATES (Campbell)

a) Operations and PI interaction

Campbell presented a flow-chart showing the interactions between EVN users, JIVE, EVN stations and the VLBI-server "vlbeer" in Bologna. JIVE can assist PIs in preparing proposals and making observing schedules, and contacts PIs before correlation to ascertain correlation parameters.

b) Astronomy gains from SFXC

The software correlator at JIVE, SFXC, has taken over all correlation, and the MkIV correlator has been dismantled (with some of the 1024 individual correlator chips distributed to various people). There are now essentially no limits on the number of inputs, total bit-rate, number of frequency points and integration time, but of course the size of the correlator output would grow correspondingly.. Wider field mapping is possible, and a number of other improvements have been implemented.

The SFXC also makes possible some new astronomical modes, including multiple phase centers, pulsar gating/binning, wide-field mapping, and

"phasing up" the EVN.

c) Realtime e-VLBI status

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e-EVN has grown from 6 stations at 128Mbps in March 2006 to routine 9-10 stations at 1Gbps (Nt, Sh and Ys upgraded to 1 Gbps since the Bordeaux EVN Symposium). KVAZAR telescopes and Urumqi are still not connected. Arecibo is limited to 512Mbps.

d) Proposal Tool: recent modifications

Campbell reported on new features of the EVN proposal tool. An e-VLBI observation can be requested as a segment of both EVN and Global disk proposals ('E' and 'G' proposals) at the "observation" level.

A new row in the array-specification box was added, named "EVN telescopes with individual limitations". This includes stations that are identified which require special consideration before selection (e.g. Jb1 at 6cm; Cm; and Hh). A new link has been provided to the help file for these cases.

Out-of-Session observing segments may be proposed and a dialog box is provided for defining an acceptable array subset.

A number of other features related to SFXC correlator parameters have been introduced and updated.

Finally, Campbell presented plots of current solar activity, including predictions for this solar cycle.

DISCUSSION

McKean suggested that the correlation should be run using parameters specified via the proposal tool. Some data sets are large (5.5 Tb). The output should be close to what the user will use. Van Langevelde noted that proposers need to specify correlation parameters clearly. Perez-Torres pointed out that TNA funds are available for European users to visit JIVE for help with data analysis.

Campbell emphasized that there already is a need for pre-correlation discussion about correlation parameters (and their consequences in terms of field-of-view, output size), treatment of sources in the archive, etc.) so PIs have to sign off on the size of the output they'll get before correlation starts.

3 EVN SCHEDULING (Gunn)

Gunn described the process whereby EVN session schedules are made, based on proposal grade ("the way to get on is to get a better grade"), modified by factors such as disk supply, competition for the same GST intervals, availability of non-EVN telescopes (e.g. VLA, GBT, Robledo..), and rareness of observing band.

4 OPEN DISCUSSION (Motivator - Perez-Torres)

a) Recent proposal numbers (Muxlow)

Muxlow worried about a fall in the number of EVN proposals submitted at the last 2 deadlines, especially 1 October, and wondered whether the EVN was "doing something wrong".

Petrov asked whether the total time requested was also down.

Polatidis wondered whether proposers were too busy preparing their EVN Symposium contributions.

Campbell wondered whether NRAO's change to February and August deadlines had some effect. Kovalev noted that proposals submitted to EVN by 1 June could be re-submitted rapidly to NRAO for the VLBA at the 1 August deadline if the EVNPC had not approved them. This was not possible for 1 October submission, so one might expect a dip in proposals submitted for the NRAO 1 August deadline. Richards stated that, while some might "game the system", for others, submitting an EVN proposal was still very difficult and should be made easier. Some had difficulty with the EVN sensitivity calculator. Kovalev thought the EVN sensitivity calculator was very useful and thanked JIVE and the individual responsible.

Van Langevelde noted that the VLBA now offers 2 Gbps. Muxlow stated that the EVN would also soon offer this.

b) Calibration issues (ANTAB tables) (suggested by Robert Schulz)

Schulze had drawn attention in an email to deficiencies in the amplitude calibration which had been provided by some EVN observatories for some experiments. ANTAB tables were incomplete, although in some cases TSYS information was available in the station

logfile or in a separate ANTABFS table. For one station no TSYS values for 22GHz were available at all. Perhaps, it would be possible to automatically check the general ANTAB table with respect to the participating stations and prepare a short note for the PI if something is missing.

Campbell reminded PIs that one of the principal intentions of the EVN pipeline is to insulate users from having to work with "raw" calibration data from individual stations' logs and/or antabfs files. Rather, they should use the experiment-wide antab file prepared by the support scientist in the pipeline (one per pipeline pass). A "TSYS" plot based on this prepared antab file and a post-apcal "GAIN" plot are also present for each pipeline pass. JIVE probably needs to adjust the experiments' directory pages on the pipeline to discourage direct access to the raw logfiles.

c) Global VLBI at ~150MHz (suggested by Olaf Wucknitz)

Wucknitz raised the topic of expanding the EVN's low frequency capabilities, e.g. at 150 MHz. Fringes have been detected in this frequency range on all baselines between LOFAR, GMRT and ARO (Algonquin), the longest baseline being >10000km in projection, demonstrating that global low-frequency VLBI is possible. Applications would be scattering studies, "scintellometry" (as in Pen et al. 2014), but also e.g. decametric Jupiter bursts at frequencies below 40 MHz.

The current EVN telescopes do not have receivers at <= 150 MHz, but other stations could join (e.g. GMRT - also good for slightly higher frequencies - ARO, LOFAR, MWA, Paper and SKA for 100-200 MHz, and LOFAR, LWA, UTR-2 and SKA for <100MHz). These stations do not necessarily have to become members of the EVN, but the EVN could still help in coordinating such experiments on different levels.

Perez-Torres asked whether there was interest in the community for doing this. Kovalev noted that there was currently interest in 90cm (327MHz) but there were few EVN telescopes supporting this band and he would like more, as well as lower frequencies.

d) mm-band improvements (suggested by Richard Dodson and Maria Rioja)

Perez-Torres noted that EVN supported 22GHz and 43 GHz observing and that FPT (frequency phase transfer) might be explored on the EVN. Muxlow suggested that the EVN Newsletter could be used as a forum to start discussions to see if there is a strong interest in the community. Rioja suggested that this should also be discussed at GMVA (3mm wavelength) observatories. Taehyun Jung noted that the KVN 4-frequency system was not only useful for astrometry and FPT but also for spectral line work. A system had been test on one of the VERA

telescopes and a start had been made at Yebes. Alef suggested that the 4-frequency system should be discussed at ERATEC to investigate the difficulties of deploying it in Europe.

Perez-Torres asked about the possibilities of rapid frequency changing (within the same day) in EVN sessions. Gunn noted that this was not generally possible at all telescopes. Lindqvist mentioned that there is an ongoing discussion within the EVN on how to improve frequency agility. Dodson noted that FPT had been demonstrated with the VLBA by switching between 43 and 86 GHz. Porcas pointed out that a subset of EVN telescopes could possibly be scheduled for fast frequency changing between certain frequency pairs.

5) ANY OTHER BUSINESS

No new topics were brought up.

The meeting concluded by thanking Tom Muxlow, the outgoing EVNPC Chair, for all the work he had put in on behalf of EVN users during his extended term of office.

(Notes taken by Richard Porcas)