



Report from the event supported by RadioNet

TITLE *CASA VLBI WORKSHOP*

DATE: *2-6 OCTOBER 2017*

LOCATION: *DWINGELOO, THE NETHERLANDS*

MEETING WEBPAGE: *<http://www.jive.eu/casa-vlbi2017/index.php>*

HOST INSTITUTE: *JOINT INSTITUTE FOR VLBI ERIC (JIVE)*

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BENEFICIARY / NO:** *JIV-ERIC / 5*

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Report:

1. SCIENTIFIC SUMMARY

The CASA-VLBI Workshop was organized on October 2.6, 2017 by JIV-ERIC and ATSRON in Dwingeloo/NL. We have had 20 people working on data processing of different kinds of data.

Our goals were to expose the new CASA VLBI tools to different types of experiments from different VLBI instruments in order to uncover missing features and bugs. These goals were achieved successfully, we even managed to fix a few of the crucial problems during the workshop and verify them. Participants were trained in using the old and new CASA tools, and are now proficient in processing basic VLBI observations in CASA, analysing the results, and identifying problems in the tools and their observations.

Another goal was to collect remaining problems in a prioritised document. We had two dedicated discussion sessions, and ended the meeting with a ranked list of unsolved problems. Several problems already have potential solutions, but require more resources or time to be solved completely. There are several high priority issues in the new CASA fringe fitting task. These range from relatively basic fixes, up to the most critical issue, which is reassessing the convergence criterion in the globalisation step. We have collected test data from all users, and several scripts, to verify future changes to the code.

We have made a major step in the direction of exposing a broader audience to the new CASA VLBI tools. The performance of the CASA tools is judged sufficient by the current experts, and when the high priority issues are fixed and verified, we can start to explore exposing more users to the tools, and even including the tutorials given in the workshop as part of the larger interferometry schools like ERIS.

Overall the workshop was a big success. The format reflected the LOFAR busy weeks, in the sense that the workshop was dominated by actual data processing, which sparked many detailed discussions between small groups of people. Two dedicated plenary discussion sessions ensured that all the information from the smaller discussions has been captured. Several people have already asked about a repeat of the event.

The workshop website can be found here: <http://www.jive.eu/casa-vlbi2017/index.php>

2. AGENDA OF THE EVENT

Note that the final agenda deviates from the one on the website. The meeting was flexible and we had to reschedule some talks due to illness of the speaker.

Monday 2 October

- 11:00 Welcome and introduction of tutors & participants
- 11:30 Talks: Description of the fringe-fit task in CASA by Des Small
- 11:45 Tutorial: Processing EVN data with CASA by Ilse van Bommel
- 12:30 Lunch
- 13:30 Tutorial: Processing GMVA and EHT data with CASA by Michael Janssen
- 14:30 Get started with individual work
- 15:00 Tea break
- 15:30 – 17:30 Working on tutorial or data processing individually

Tuesday 3 October

- 9:00 Round table discussion: Goals for the week per participant
- 9:45 Talk: Description of new tools in and out of CASA by Mark Kettenis
- 10:30 Coffee break with JIVE employees
- 11:00 – 17:00 Individual work, issues are collected in a google document

Wednesday 4 October

- 9:00 – 16:00 Individual work and discussions
- 16:00 – 17:30 Plenary discussion on issues collected so far

Thursday 5 October

- 9:00 Individual work and discussions
- 12:30 Lunch
- 13:30 Talk: Update on status of VLBA by Walter Brisken
- 14:30 – 17:30 Individual work

Friday 6 October

- 9:00 Individual work and discussions
- 10:30 Coffee break
- 11:00 Plenary discussion on issues collected
- 12:30 Lunch
- 14:00 Formal close of workshop, several participants continue until 17:00

3. PARTICIPANTS

The participants were selected from a group of over 40 interested applicants. We selected based on previous CASA experience and VLBI expertise, taking care to include women and minority groups. We also included a few young researchers who work in the field of VLBI. Several tutors were invited to assist during this week. Because we had 7 tutors we decided to accept 13 participants, 3 more than originally anticipated. Our tutors were:

- Walter Brisken (director of LBO, USA)
- George Moellenbrock (lead of CASA development at NRAO, USA)
- Michael Janssen (expert on high-frequency VLBI data processing in CASA, Nijmegen/Haystack)
- Dirk Petry (CASA developer at ESO, Munich)
- Des Small (CASA developer at JIVE)
- Mark Kettenis (calibration and correlator expert at JIVE)
- Ilse van Bemmelen (project scientist at JIVE)

Participants came from several European countries and Korea, Australia, South Africa, and USA. They represented a broad range of different VLBI telescopes. We aimed to have no more than two participants per VLBI instrument:

- Tuomas Savolainen (Aalto University Metsähovi Radio Observatory, Finland)
- Rusen Lu (MPIfR, Germany)
- Ivan Marti-Vidal (Onsala Space Observatory, Sweden)
- Monica Orienti (INAF - IRA Bologna, Italy)
- Roger Deane (Rhodes University, South Africa)
- Krisztina Gabanyi (Konkoly Observatory, Hungary)
- Leah Morabito (Oxford, United Kingdom)
- Cormac Reynolds (CSIRO Astronomy and Space Science, Australia)
- Javier Moldon (JBCA, United Kingdom)
- Rachael Ainsworth (JBCA, United Kingdom)
- Patil Pallavi (University of Virginia, USA)
- Youngjoo Yun (Korea Astronomy and Space Science Institute, Korea)
- Taehyun Jung (Korea Astronomy and Space Science Institute, Korea)

See attached document for the signatures of tutors and participants.



Group photo in front of the Dwingeloo Radio Telescope

4. RADIO NET FINANCIAL CONTRIBUTION

The RadioNet contribution was used for local expenses related to the organization and hosting of the participants at JIVE. We provided snacks during the day, lunch, and some local transportation. Three participants received financial support for additional local expenses and accommodation. Details are in the financial report.

Supported participants:

- Leah Morabito (UK)
- Pallavi Patil (USA)
- Roger Deane (South Africa)

5. PUBLICATIONS

So far no formal publications have resulted from this event.

CASA VLBI workshop

Sign up sheet

Last name	First name	Signature
Ainsworth	Rachael	Rachael Ainsworth
Briskin	Walter	Walter Briskin
Deane	Roger	R Deane
Gabanyi	Krisztina	Krisztina Gabanyi
Janssen	Michael	Michael Janssen
Jung	Taehyun	Taehyun Jung
Kettenis	Mark	Mark Kettenis
Lu	Rusen	Rusen Lu
Marti-Vidal	Ivan	Ivan Marti-Vidal
Moellenbrock	George	George Moellenbrock
Moldon	Javier	Javier Moldon
Morabito	Leah	Leah Morabito
Orienti	Monica	Monica Orienti
Patil	Pallavi	Pallavi Patil
Petry	Dirk	Dirk Petry
Reynolds	Cormac	Cormac Reynolds
Savolainen	Tuomas	Tuomas Savolainen
Small	Des	Des Small
van Bommel	Ilse	Ilse van Bommel
Yun	Youngjoo	Youngjoo Yun