REPORT ON THE RADIONET3 NETWORKING ACTIVITY

TITLE: MILLIMETER VLBI DATA PROCESSING AND SIMULATIONS WORKSHOP

DATE: 8-11 JUNE 2015 **TIME: WHOLE DAY**

LOCATION: LEIDEN, THE NETHERLANDS

MEETING WEBPAGE: http://www.jive.nl/mm-vlbi2015/index.php

HOST INSTITUTE: LORENTZ CENTER

PARTICIPANTS NO: 22

MAIN LEADER: JIVE

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REPORT:

1. Programme of the meeting

Monday 8 June

11:00	Welcome	

Session 1: Observation, calibration, imaging

11:20	Fish	HOPS/EHT
11:40	Krichbaum	GMVA/AIPS
12:00	Goddi	Spectral line observations with mm-VLBI
12:20	Discussion	
12:30	Lunch	
14:00	Ortiz	First VLBI observations with the LMT
14:20	Blackburn	Amplitude calibration
14:40	Kettenis	A priori VLBI calibration in CASA
15:00	Tea	
15:30	Discussion	Meta data standardization (chair: Kettenis, van Bemmel)
16:30	van Bemmel	JIVE ongoing work
16:50	Small	CASA fring development
17:30	End	

Tuesday 9 June

09:00	Brinkerink	Introduction to tutorials
09:30	Fish	EHT/HOPS tutorial
10:45	Coffee	
11:15	Krichbaum	GMVA/AIPS tutorial
12:30	Lunch	
14:00	Lu	Imaging tutorial
15:15	Tea	
15:45	Bouman	New imaging methods (talk via Skype)
16:15	Akiyama	Talk and demo on sparse imaging
17:00	Discussion	Imaging algorithms for mm-VLBI (chair: Fish)
17:30	End	
19:00	Social dinner	

Wednesday 10 June

09:00	Crew	EHT/ALMA Correlation with DiFX
09:20	Johnson	Polarization Leakage and Calibration
09:40	Marti-Vidal	Mixing polarization (talk and demo)
10:30	Coffee	
11:00	Discussion	Polarization calibration (chair: van Bemmel)
12:00	Lunch	

Session 2: Theory and simulations

13:30	Discussion	Mitigating the Effects of Interstellar Scattering for VLBI (chair: Johnson)
14:30	Moscibrodzka	Black hole theory
14:50	Deane	MeqSilhouette: mm-VLBI simulations and parameter estimation

15:30 Tea break
16:10 Discussion Simulation requirements (chair: Deane)
17:30 End

Thursday 11 June

09:30	Lu	MAPS tutorial
10:30	Coffee	
11:00	Blecher	MeqTrees tutorial
12:15	Lunch	
13:30	Fish	Wrap-up of EHT/HOPS tutorial
14:00	Discussion	Outcomes and future work (chair: van Bemmel)
15:30	End	

2. Scientific Summary

This was a first attempt to build stronger ties between different teams working on mm-VLBI across the globe. An important outcome of the meeting was the networking that went on during the breaks and social dinner. As such, the meeting was a major success in making new links and strengthening existing ones. The meeting laid a fundamental basis for future development of training sessions and data schools for mm-VLBI, and was crucial in linking ongoing software development.

From the talks, tutorials and discussion several recommendations have been filtered:

1. We should work towards a standard data format to allow exchange of data, verify existing software and test new software. Recognizing the complimentary strengths of HOPS, AIPS and CASA, development of conversion routines between the different formats would allow users to easily switch between packages. With the long-term view of mm-VLBI in mind, the most logical choice for a standard format is the Measurement Set.

2. It was agreed that in order to support the building of a larger (mm-) VLBI community, CASA needs to be developed to support (mm-) VLBI data processing. It was stressed that any implementation of the fringe finder should at least have the same functionality as AIPS and HOPS, and preferably have additional options for e.g. ad-hoc phase corrections. The developments in CASA should not interfere or conflict with existing functionality for specific instruments.

3. The participants strongly recommend having information exchanges like this workshop occur more frequently, and preferably organized by different institutes. This serves to build a solid community and fosters collaboration across the globe. Once or twice per year seems a suitable cadence.

4. There is a clear demand from the astronomical community to educate a broader audience about data processing for VLBI and mm-VLBI. We recommend a data school to be set up early next year (February 2016) aimed at an audience with some radio interferometry background, and recommend to specifically include ARC support staff, PhDs and junior post-docs who are actively involved. This school would teach the basic data processing approach, including calibration, fringe fitting and imaging techniques.

5. In order to secure mm-VLBI for future generations, the participants recommend developing closer ties between existing teams, easy access to data and processing methods, and a pro-active attitude towards a coherent organizational structure.

3. Attendance list (incl. participant names, affiliation and country) signed by the participants and confirmed by the organizer

Last name	First name	Institute	Country
Akiyama	Kazunori	NAOJ	Japan
Asada	Keiichi	ASIAA	Taiwan

Blackburn	Lindy	Harvard-SAO	US
Blecher	Tariq	Rhodes University/SKA SA	RSA
Brinkerink	Christiaan	Radboud University	NL
Crew	Geoff	MIT/Haystack Observatory	US
Deane	Roger	Rhodes University/SKA SA	RSA
Fish	Vincent	MIT/Haystack Observatory	US
Goddi	Ciriaco	Radboud University	NL
Johnson	Michael	Harvard-Smithsonian CfA	US
Kettenis	Mark	JIVE	NL
Krichbaum	Thomas	MPIfR	D
Lu	Rusen	MPIfR	D
Marti-Vidal	Ivan	Onsala Space Observatory	Sweden
Moscibrodzka	Monika	Radboud University	NL
Müller	Cornelia	Universität Würzburg	D
Ortiz	Gisela	CRyA Universidad Nacional Autonoma	Mexico
Schellart	Pim	Radboud University	NL
Small	Des	JIVE	NL
Stewart	Ian	Allegro Leiden	NL
Tilanus	Remo	Allegro Leiden/Radboud University	NL
van Bemmel	Ilse	JIVE	NL

Note: RSA = Republic of South Africa

4. Financial Report / RadioNet3 contribution

The RadioNet3 funding of aprox 5000 € was used to compensate travel expenses for participants who were crucial for future work, but had none or insufficient funding of their own.

5. Conference Proceedings and Web page

The talks have been collected and are provided online on the conference website. Areport has been written with a summary of the presentations and the discussions.
http://www.jive.nl/mm-vlbi2015/index.php