



Report from the event supported by RadioNet

TITLE *ANNUAL MEETING OF THE MAGNETISM KEY SCIENCE PROJECT IN 2018*

DATE: *10-14.09.2018*

LOCATION: *KRAKÓW, POLAND*

MEETING WEBPAGE: *<http://mksp2018.oa.uj.edu.pl/>*

HOST INSTITUTE: *ASTRONOMICAL OBSERVATORY OF THE JAGIELLONIAN UNIVERSITY,
ORLA ST. 171, 30-244 KRAKÓW, POLAND*

**RADIONET
BENEFICIARY / NO:** *OSO / 7*

Report:

1. SCIENTIFIC SUMMARY

The LOFAR MKSP Annual Meeting in 2018 was held to review the yearly progress of the low-frequency radio studies of the cosmic magnetism. During the five-day meeting, we tried to address the latest results of studying of the galaxy magnetism with LOFAR – especially those that were connected to the LOFAR Two Metre Sky Survey, the newest survey project of this instrument. As many as 27 oral presentations were given during the first two days, covering a broad spectrum of cosmic magnetic fields: from magnetic fields in our own Galaxy, through the nearby and distant analogons, to the large-scale structures found in clusters, groups, or supplied by the jets of the AGNs. This was complemented by presentations focusing on more technical aspects, like the new software packages, and hardware upgrades that can render studies of the magnetic field in an easier and more accurate manner.

The important part of discussions were future plans, especially the collaboration with the soon to be started IMAGINE project (Interstellar MAGnetic field INference Engine – a Bayesian platform made to explore the multi-dimensional likelihood space with the use of robust statistical methods – Boulanger et al. 2018) and the work with the LoTSS (the LOfar Two-metre Sky Survey, an all-northern sky survey at the frequency of ~150 MHz, made using LOFAR – Shimwell et al. 2017) data. The just published (first days of October) second data release will require diverting manpower and computing resources from other projects, and in the course of discussions preliminary plans for handling the new datasets were made. It can be stated that the MKSP is now ready for the unknown that awaits in the new observations.

The work during Busy Days was mostly related to the implementation and caveats of the newly designed software. LOFAR is now upgrading from the older, semi-automatic data reduction pipelines (eg. Black-Board Selfcal, combined with AWimager implementation of the Högbom CLEAN algorithm) to fully automatic ones (preFACTOR, FACTOR, KillMS CLEAN-ing). The new methods are also developed in order to allow processing of polarised data. With the help of the experts, it was possible to prepare the MKSP members for using the new tools in a way that allows fast end efficient data processing, resulting in a significant reduction of the needed time.

The details regarding the meeting, including the full list of participants or the conference program can be found at <http://mksp2018.aa.uj.edu.pl/>.

2. AGENDA OF THE EVENT

The agenda is presented in the attachment.

3. PARTICIPANTS

Including the LOC members, 43 scientists participated in the meeting, from institutes in Europe, Australia, and Japan.. Many of the attendees were young scientists (postdocs and PhD students), with 15 expert radio astronomers to provide experience and lead the discussions. One third of the participants were female – both experts, and young researchers. The full list of the supported participants (as well as the amount of funding) can be found in Section 4. The list of people who expressed interest in subscribing to the RadioNet can be found in the attachment.



The lists of participants can be found in the attachment.

4. RADIO NET FINANCIAL CONTRIBUTION

The RadioNet support of 3000 EUR was used solely for the purpose of supporting the travel and accommodation of the selected participants. Before the conference, announcements were distributed with an explicit statement that young scientists can apply for support. Three young scientists have asked for the support of the RadioNet. We have also prepared a list of invited speakers that would be of high value for our conference. Unfortunately gender-balancing of the list was not possible. The initial list of 7-8 experts was more balanced, with 3/4 female speakers; unfortunately, two of them turned out to be unavailable during the dates scheduled for the meeting. Concerning the Young RadioNet facilities users, only three men applied for the funding, despite several reminders that there is such a possibility. Each person supported by the RadioNet was given an additional support from the Organisers in the form of a fee waiver.

5. PUBLICATIONS

Proceedings are not planned.

2018 LOFAR Magnetism KSP Annual Meeting Program

Kraków, Poland, 10-14 September 2018
Faculty of Physics, Astronomy and Applied Computer Science of the Jagiellonian University

MONDAY 10 SEPTEMBER

Lecture room A-1-03

9:00 - 9:15 Registration

9:15 - 9:30 Welcome words by the Jagiellonian University authorities

LOFAR and surveys session (Chair Cathy Horellou)

Invited talks

9:30 - 10:00 Marco Iacobelli, LOFAR: current status and future perspectives

10:00 - 10:15 Cyril Tasse, Calibration and imaging algorithms of the LOFAR Two-metre Sky Survey

10:15 - 10:45 Tim Shimwell, An update on the LOFAR Two-metre Sky Survey

10:50 - 11:20 Coffee

Milky Way session (Chair Marco Iacobelli)

Invited talk

11:20 - 11:50 Jörg P. Rachen, Ultra-high energy cosmic ray deflections in the Galactic magnetic field

11:50 - 12:05 Vibor Jelic, Magnetically aligned straight depolarisation canals and the Rolling Hough Transform

12:05 - 12:20 Marta Alves, Faraday tomography of a high Galactic latitude region: search for Faraday filaments (remote talk)

12:20 - 12:35 Charlotte Sobey, LOFAR Faraday rotation measures towards pulsars

12:35 - 13:40 Lunch (ground floor)

Cosmic Rays session (Chair Marco Iacobelli)

13:40 - 13:55 Andrew Fletcher, Modelling Cosmic Ray Electron Propagation

13:55 - 14:10 Volker Heesen, Modelling radio haloes in nearby galaxies with 1D cosmic ray transport

Nearby Galaxies session (Chair Andrew Fletcher)

14:10 - 14:25 Cathy Horellou, Activities of the Nearby Galaxies working group

14:25 - 14:40 George Heald, A multifrequency view of the extended radio continuum halo in NGC 5775

14:40 - 14:55 Arpad Miskolczi, CHANG-ES XIV: A LOFAR and VLA view of the edge-on star-forming galaxy NGC3556

14:55 - 15:10 Ralf-Juergen Dettmar, The CHANG-ES view of edge-on galaxies

15:10 - 15:25 Julia Piotrowska, LOFAR view of NGC6946

15:30 - 16:00 Coffee

Discussion session (Chair Andrew Fletcher)

16:00 - 17:00 Science Discussion 1 - IMAGINE - Jörg P. Rachen and Andrew Fletcher

17:00 - 18:00 Science Discussion 2 - MKSP membership, MKSP WGs - George Heald and WGs chairs

19:30 DINNER in the downtown

TUESDAY 11 SEPTEMBER

Lecture room A-1-03

Nearby Galaxies session - continued (Chair Andrew Fletcher)

9:15 - 9:30 Björn Adebahr, Thermal absorption in M51

9:30 - 9:40 Krzysztof Chyży, MSSS galaxy spectra

Methods sessions (Chair Charlotte Sobey)

Invited talk

9:40 - 10:10 Hanna Rothkaehl, Probing ionospheric structures with LOFAR

10:10 - 10:25 Sarrvesh Sridhar, cuFFS: A GPU accelerated package for RM Synthesis Presentation

10:25 - 10:40 Yoshimitsu Miyashita, Sparse reconstruction using total squared variation of polarimetric observations at low frequency

10:40 - 10:55 Haruya Eguchi, Analysis of the magnetic field of galaxies using Faraday tomography

11:00 - 11:30 Coffee

Radio galaxies session (Chair Volker Heesen)

Invited talk

11:30 - 12:00 Magdalena Kunert-Bajraszewska, AGN's life cycle - short-lived radio sources

12:00 - 12:15 Marek Jamroz, Powerful radio galaxies and their life cycles

12:15 - 12:30 Noelia Herrera Ruiz, VLBI uncovering the AGN population

12:30 - 13:30 Lunch (ground floor)

13:30 - 13:45 Shane O'Sullivan, Intergalactic magnetic fields probed by giant radio galaxies

13:45 - 14:00 Urszula Pajdosz, Megaparsec-scale radio structure associated with a hybrid blazar: episodic jet activity with precessing axis

Galaxy groups and clusters session (Chair Ralf-Juergen Dettmar)

14:00 - 14:15 Marek Urbanik, Pre-LOFAR low-frequency studies of intergalactic magnetic fields in galaxy pairs and groups

14:15 - 14:30 Amanda Wilber, The evolutionary phases of merging clusters as revealed by LOFAR

Discussion session (Chair Ralf-Juergen Dettmar)

14:40 - 15:30 Science Discussion 3 - Polarization and ionospheric corrections - Shane O'Sullivan, Hanna Rothkaehl

15:30 - 16:00 Coffee

16:00 - 16:45 Science Discussion 4 - LoTSS, proposals and future - Tim Shimwell, Cyril Tasse, George Heald, Ralf-Juergen Dettmar, Krzysztof Chyży

Open lecture (Lecture room A-1-06) (Chair Błażej Nikiel-Wroczyński)

17:00 - 18:00: George Heald and Tim Shimwell, Exploring the Universe with the world's largest radio telescopes

18:00 - 18:30 Closing remarks

WEDNESDAY 12 SEPTEMBER

Busy day

Computer room F-1-08

9:30 - 9:45 Plans for busy days - Shane O'Sullivan

9:45 - 11:00 Science discussion 5, LOFAR 2.0 planning, etc. moderators TBD

11:00 - 11:30 Coffee

12:30 - 13:30 Lunch (ground floor)

15:30 - 16:00 Coffee

THURSDAY 13 SEPTEMBER

Busy day

Computer room F-1-08

9:30 -

11:00 - 11:30 Coffee

12:30 - 13:30 Lunch (ground floor)

15:30 - 16:00 Coffee

Grill party

FRIDAY 14 SEPTEMBER

Busy day

Computer room F-1-08

9:30 -

11:00 - 11:30 Coffee

12:30 - 13:30 Lunch (ground floor)