LOFAR Key Science Project on

Cosmic Magnetism

in the Nearby Universe

(MKSP)

Rainer Beck

MPIfR

MKSP webpages

Public webpage:
http://www.mpifr-bonn.mpg.de/staff/rbeck/mksp.html
(Webmaster: Rainer Beck)
Basic informations, images, member list, news

Internal WIKI page:
http://blogger.astro-rub.de/airubblog
(Webmaster: Enno Middelberg)
General documents, diagrams, documents from workshops, minutes from MT telecons, etc.

Commissioning document server:
Mksp.commissioning@google-documents
(Webmaster: Andreas Horneffer)

LOFAR User Forum:
http://usg.lofar.org/forum

77 MKSP Members

(36 German, 11 Dutch, 10 UK, 8 PL, 12 other international)

Management Team (4):

R. Beck (PI), J.A. Anderson (MPIfR Bonn)
G. Heald (ASTRON Dwingeloo), A. Scaife (IAS Dublin)

27 full members:

R. Gießübel, A. Horneffer, J. Köhler, M. Kuniyoshi, D. Mulcahy,
A. Noutsos, W. Reich, C. Sobey (MPIfR Bonn)
R.J. Dettmar, A. Miskolczi, C. Sotomayor (Univ. Bochum)
M. Bell, T. Enßlin, H. Junklewitz, T. Riller (MPA Garching)
A. di Vincenzo (Tautenburg)
M. Brentjens, G. de Bruyn, R. Pizzo (ASTRON Dwingeloo)
M. Haverkorn, E. Orru (Nijmegen)
M. Iacobelli , C. Shneider (Leiden)
P. Alexander (MRAO Cambridge)
K. Chyzy (Cracow)
A. Fletcher (Newcastle)
J. Geisbüsch (Dominion Radio Obs.)

46 associated members:

B. Adebahr (Bochum)
G. Arshakian (MPIfR Bonn)
N. Ben Bekhti (Univ. Bonn)
G. Bernardi (CfA Cambridge/USA)
D. Bomans (Bochum)
J. Broderick (Southampton)
M. Brüggen (Jacobs Univ. Bremen)
E. Carretti (CISRO Sydney)
J. Conway (Onsala Radio Obs.)
R. Drzazga (Cracow)
S. Duscha (ASTRON Dwingeloo)
J. Eislöffel (Tautenburg)
J. Farnes (MRAO Cambridge)
L. Fauvet (Nijmegen)
L. Feretti (IRA Bologna)
K. Ferrière (Toulouse)
D. Green (MRAO Cambridge)
V. Heesen (Hertfordshire)
M. Hoeft (Tautenburg)
C. Horellou (Onsala Radio Obs.)
M. Jamrozy (Cracow)
J. Jasche (Univ. Bonn)
V. Jelic (ASTRON Dwingeloo)
W. Jurusik (Cracow)
J. Kim (Korea Astr. Inst.)
U. Klein (Univ. Bonn)
M. Kramer (MPIfR Bonn)
M. Krause (MPIfR Bonn)
M. Krause (MPE Garching)
E. Middelberg (Bochum)
H. Miraghaei (Tehran)
B. Nikiel-Wroczynski (Cracow)
K. Otmianowska-Mazur (Cracow)
R. Paladino (IRA Bologna)
C. Pfrommer (ITS Heidelberg)
A. Purkayasta (Univ. Bonn)
J. Riley (MRAO Cambridge)
D. Schnitzeler (ATNF Sydney)
A. Shukurov (Newcastle)
M. Soida (Cracow)
B. Stappers (Manchester)
F. Tabatabaei (MPIA Heidelberg)
M. Trasatti (Univ. Bonn)
M. Urbanik (Cracow)
W. Vlemmings (Onsala Radio Obs.)
M. Wezgowiec (Bochum)

Membership criteria (revised)

Definition of memberships in the LOFAR Magnetism Key Science Project (MKSP)

Management Team (MT):

- Represents the major countries involved in the MKSP
- Ensures representation in the LOFAR commissioning and software working groups, in the international committees of LOFAR and in the national LOFAR consortia
- Works on management and progress of the project
- Decides on membership, cooperation, data right and authorship issues
- Holds regular telecons.

Full members:

- Invest at least **20%** (average over ~3 years) of working time for the MKSP, or provides funding for a student working at least 50% for the MKSP
- PhD students: invest at least **50%** of working time for the MKSP
- Full members entering at later project stages have to invest more time
- Lead working group or task group of the MKSP
- Participate actively in the commissioning observations and data analysis
- Attend all workshops, plenary meetings and Busy Weeks of the MKSP
- Attend the bi-weekly commissioning telecons
- Get access to the commissioning data
- Get full access to the MKSP data
- Become co-author on papers based on commissioning MKSP data (also after leaving the project)
- Have the right on co-authorship on papers based on full MKSP data (also after leaving the project).

Associated members:

- Bring in and share expertise or data of interest for the MKSP
- Participate in working group or task group of the MKSP
- Attend workshops and plenary meetings of the MKSP
- Get limited access to commissioning and MKSP data
- Cooperate and become co-author on individual projects.

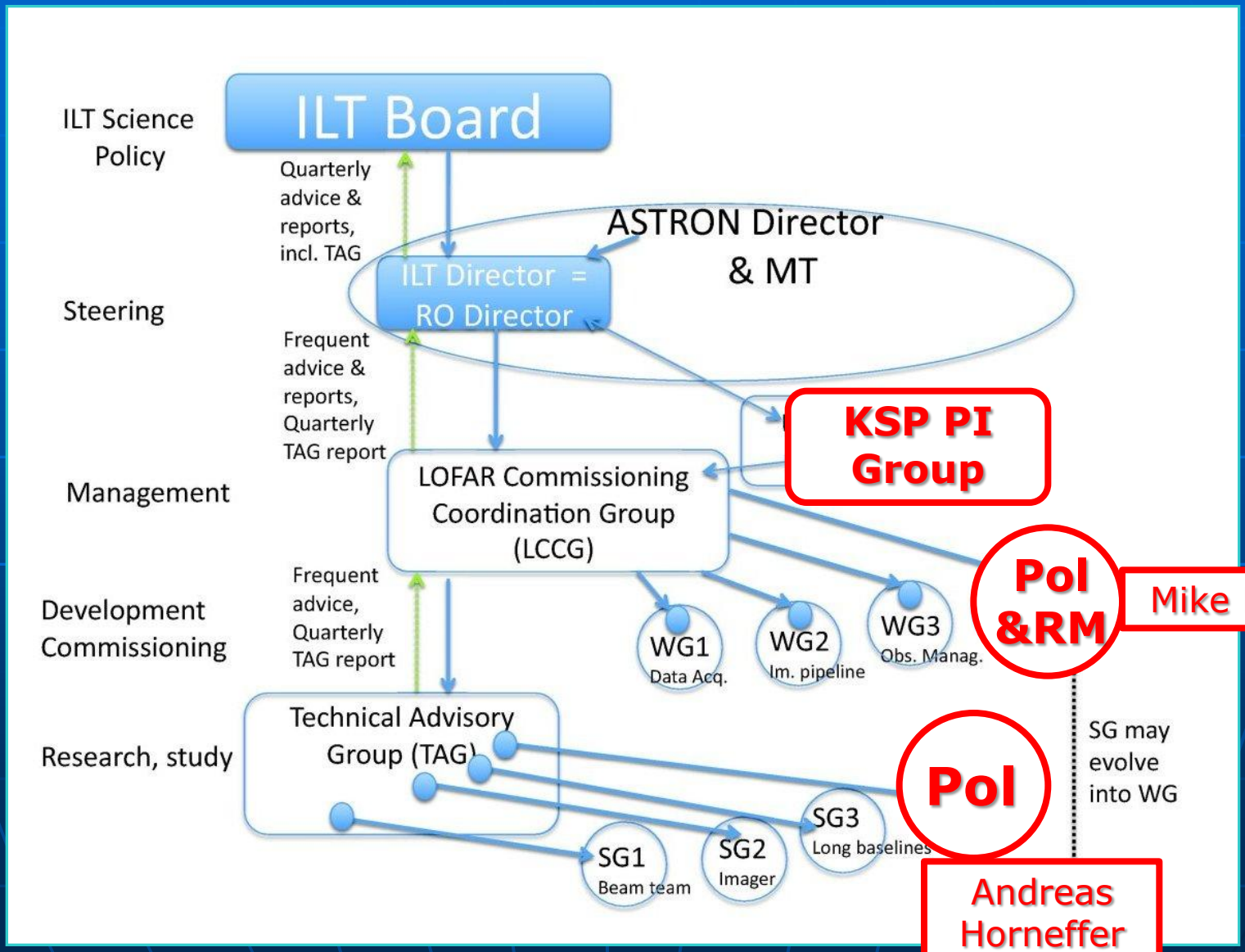
MKSP Management Team

- 6 telecons and 3 meetings in 2011 so far
- Minutes available on the MKSP WIKI
- Main topics:
  - Commissioning guidelines
  - Membership criteria
  - Membership applications
  - Preparation of KSP meetings
  - Discussion with national consortia
  - Give talks on conferences
  - Write papers and proposals

MKSP working groups

- Milky Way (Chair: M Haverkorn)
- Pulsar RMs (Chair: A.Noutsos)
- Nearby galaxies (Chair: C.Chyzy)
- Giant radio galaxies (Chair: G.de Bruyn)
- Intergalactic filaments (Chair: T.Enßlin)
- Polarised stellar and AGN jets (Chair: J.Eislöffel)
- TAG Study Group on polarization (Chair: A.Horneffer)
- LCCG Working Group on Pol & RM Pipeline (Chair: M.Bell)

LOFAR management structure



New: Commissioning guidelines

Guidelines of LOFAR commissioning by the students of the MKSP

The Management Team of the MKSP has decided on the following strategy of future commissioning work of the MKSP:

1. Students who are full MKSP members need to work on at least one LOFAR commissioning task and invest at least 50% of their time on the tasks. Students who are associated members of the MKSP are asked to contribute to LOFAR commissioning as much as possible.
2. The fraction of time investment and the required period is agreed individually among the supervisor, the MT and the student, in accordance with the expertise and long-term interest of the student.
3. The students who are full MKSP members should asap indicate to Andreas Horneffer, the commissioning coordinator, (1) which task they wish to take over and (2) which existing or potential data sets would be useful for their thesis activities. In agreement with the student and his/her supervisor, Andreas will then assign an appropriate commissioning task and data set.
4. The supervisor, together with the MT, will take care that an appropriate balance between commissioning and other thesis work continues to be met, such that the best interests of MKSP student members are protected. Students should not hesitate to discuss any concerns directly with the MT.
5. The student's supervisor will ensure that the commissioning task complies with the outline and becomes part of the student's PhD thesis.
6. The task and work progress will be reported to the LOFAR Technical Advisory Group (TAG) by the commissioning coordinator, to avoid work duplication and to coordinate with the other commissioning activities. Students should report their progress in a timely manner, e.g. at the biweekly commissioning telecons.
7. The MKSP MT and the commissioning coordinator will supervise the work on the task and organize contact to experts within the LOFAR teams, if needed.
8. The students working on a commissioning task are asked to participate in the biweekly commissioning telecons, in the Busy Wednesdays and in the MKSP Busy Weeks.
9. The progress of commissioning will be reviewed in reports, to be written by the commissioning coordinator. The first report is due by the end of 2011.

21 Oct 2011

The MKSP Management Team

Students working on MKSP data

Institute	Name	Degree	Topic	Importance of LOFAR data
Bochum University	Björn Adebahr	PhD	Cosmic ray transport	useful
	Arpad Miskolczi	PhD	Edge-on galaxies at low ν	important
	Carlos Sotomayor	PhD	Spiral galaxies at low ν	crucial
Bonn University	Amrita Purkayastha	PhD	Dwarf galaxies	crucial
	Monica Trasatti	PhD	Relics and halos in clusters	crucial
MPIfR Bonn	Rene Gießübel	PhD	M31 at low ν	important
	Jana Köhler	PhD	Galactic emission at low ν	important
	David Mulcahy	PhD	Spiral galaxies at low ν	crucial
	Charlotte Sobey	PhD	Pulsar RMs	crucial
MRAO Cambridge	Jamie Farnes	PhD	Survey fields	important
	Peter Sims	PhD	Radio foregrounds	useful
	Clare Rumsey	PhD	Clusters	crucial
DIAS Dublin	Rachael Ainsworth	PhD	Circular pol from stellar jets	important
MPA Garching	Henrik Junklewitz	PhD	Information theory	important
	Niels Oppermann	PhD	Galactic emission	important
Krakow Univ.	Robert Drzazga	PhD	M81/M82 at low ν	important
	Wojciech Jurusik	PhD	Galaxy spectra at low ν	crucial
	Blazej Nikiel-Wroczynski	PhD	Compact galaxy groups	crucial
Leiden Univ.	Marco Iacobelli	PhD	Fan region at low ν	important
	Carl Shneider	PhD	Turbulent ISM	important
Newcastle Univ.	Fred Gent	PhD	Numerical ISM simulations	useful
Tautenburg Obs.	Alice di Vincenzo	PhD	Commissioning and clusters	crucial
	N.N.	PhD	Ionospheric effects	crucial

- Total: 23 students
- **LOFAR data are crucial for 10 students !**

Students working on MKSP data

Remember:

Project abstracts need to be sent to
the *LOFAR Publication Committee*
lofar-papers@astron.nl
To ensure exclusive rights on the topic !

MKSP Busy Weeks

1. Dwingeloo 20-23 April 2010 (≈10 participants)
2. Dwingeloo 18-22 Oct 2010 (25 participants)
3. Bonn 21-25 March 2011 (20+3 participants)
4. Dwingeloo 6-10 June 2011 (18+3 participants)
5. Dwingeloo 23-27 Jan 2012

MKSP: progress !

- Diffuse emission from Fan region, nearby galaxies, clusters, and polarized signals from pulsars detected
- RM Synthesis successfully applied
- New organization of commissioning efforts
- Commissioning plan ready & regularly updated
- Commissioning tasks assigned to several students
- Good progress with commissioning tasks
- KSPs now substantial part of the LOFAR system
- Several MKSP students will participate in the MSS Survey
- KSP targets will be secured by ILT

MKSP issues: technical

- We are still far away from obtaining maps with thermal noise
- High failure rate of HBA antennas
- Beam correction, polarization calibration and correction of ionospheric Faraday effects are still missing in BBS calibration
- New imager does not yet include direction-dependent effects and correct dipole axis definition
- Imager is too slow for online processing
- RM Synthesis pipeline not ready
- Absolute ionospheric TEC needs to be measured (to correct for Faraday rotation)
- Data storage needs to be organized

MKSP issues: general

- Not enough experienced commissioners and software developers
- Science data emerge very slowly (but needed for PhDs)
- Time allocation for MKSP science program not yet secured

MKSP observation plan: needs revision!

- Survey of 60 (100?) galaxies
  120-180 & 180-210 MHz, 9h per galaxy, together with Surveys KSP
- Deep galaxy survey
  ≈10 + 6 galaxies, 120-180 MHz (?), 100h per galaxy, together with Surveys KSP (?)
- Milky Way fields
  piggyback with deep extragalactic fields
- Radio galaxies
  ≈10 galaxies, 3 frequency bands, 5h per galaxy per band
- Stellar jets
  ≈5 objects, 120-180 MHz, 20h per object

New MKSP long-term proposals

Probable deadline: **2012 Jan 20**

- Galaxies (PI: C. Chyzy – together with Survey KSP?)
- Milky Way (PI: M. Haverkorn)
- Giant radio galaxies (PI: G.de Bruyn)
- Polarisation from stellar jets (PI: A. Scaife)
- Intergalactic filaments (PI: T. Enßlin)

New MKSP commissioning & early science proposals

Probable deadline: **2012 Jan 20**

- Galaxies : M31, M33, M51, NGC628, NGC6946, ...
- Milky Way
- Giant radio galaxies
- Stellar jets
- Intergalactic filaments ??

WGs will meet on Friday at 12h

Goals of this workshop

- Discuss commissioning results
- Define next steps of LOFAR polarization commissioning
- Define next steps of polarization/RM Synthesis pipeline
- Prepare early science papers
- Prepare new long-term and commissioning proposals
- Revise the galaxy list for the “Tier 1” survey