REPORT ON THE RADIONET3 NETWORKING ACTIVITY

TITLE: GALACTIC SCIENCE WITH THE SKA AND ITS PATHFINDERS

DATE: **19-23 MAY 2014** **TIME:** WHOLE DAY

LOCATION: **LEIDEN, THE NETHERLANDS**

MEETING WEBPAGE: *http://www.lorentzcenter.nl/lc/web/2014/631/info.php3?wsid=631&venue=Oort*

HOST INSTITUTE: *LORENTZ CENTER*

PARTICIPANTS NO: *48*

MAIN LEADER: *UMAN*

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1. Program of the meeting

Monday 19 May 2014

09:00 - 10:00	Arrival and coffee/tea
10:00 - 10:15	Welcome by **Henriette Jensenius** of Lorentz Center
10:15 - 10:30	Introduction by organizers
10:30 - 12:00	Open Science questions 1 (the ISM)
12:00 - 13:30	Lunch break @ Snellius Restaurant and informal discussions
13:30 - 14:30	Open Science questions 2 (RRLs & astrochemistry)
14:30 - 15:00	Coffee/tea break
15:00 - 16:30	Open Science questions 3 (The Galaxy; structure, magnetism, masers)
16:30 - 17:30	Group discussion on science questions + poster pop-ups
17:30	Wine and cheese party @Common room

Tuesday 20 May 2014

09:00 - 10:30	Open Science questions 4 (star formation & circumstellar disks)
10:30 - 11:00	Coffee/tea break
11:00 - 12:00	Facility overview (ASKAP & MeerKAT)
12:00 - 13:30	Lunch break @ Snellius Restaurant and informal discussions
13:30 - 14:30	Facility overview (EVLA, LOFAR, MWA)
14:30 - 15:00	Coffee/tea break
15:00 - 16:30	Facility overview (EVN, *e*-Merlin, AVN)
16:30 - 17:30	Group discussion science/facilities & select break-out sessions for next days

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Wednesday 21 May 2014

09:00 - 10:30	Parallel Break-out
10:30 - 11:00	Coffee/tea break
11:00 - 12:00	Parallel Break-out
12:00 - 13:30	Lunch break @ Snellius Restaurant and informal discussions
13:30 - 14:30	Contributed talks
14:30 - 15:00	Coffee/tea break
15:00 - 16:30	Parallel Break-out
16:30 - 17:30	End of day summary
19:00	Workshop dinner @Restaurant Olivier

Thursday 22 May 2014

9:30 - 10:30	SKA in context: synergies with other facilities & multiwavelength surveys
10:30 - 11:00	Coffee/tea break
11:00 - 12:00	Parallel Break-out
12:00 - 13:30	Lunch break @ Snellius Restaurant and informal discussions
13:30 - 14:30	Contributed talks
14:30 - 15:00	Coffee/tea break
15:00 - 16:30	Parallel Break-out
16:30 - 17:30	End of day summary

Friday 23 May 2014

9:00 - 10:30	10-15 minute summaries of potential science cases
10:30 - 11:00	Coffee/tea break
11:00 - 12:00	The way forward (planning & funding)
12:00 - 13:30	Lunch break @ Snellius Restaurant and informal discussions
13:30 - 14:30	Group discussion
14:30 - 15:00	Coffee/tea break
15:00 - 16:30	Final group discussion & summary of outcomes

Schedule of talks

Monday 19 May 2014

10.00 - 10.10	Welcome by Lorentz Center
10.10 - 10.30	Welcome by Organising committee
10.30 - 11.00	Science talk 1: Josh Peek - ISM, HI
11.00 - 11.30	Coffee
11.30 - 12.00	Science talk 2: Marc-Antoine M-D - ISM, dust, continuum
12.00 - 13.30	Lunch
13.30 - 14.00	Science talk 3: Raymond Oonk -RRLs
14.00 - 14.30	Science talk 4: Serena Viti - astrochemistry
14.30 - 15.00	Coffee
15.00 - 15.30	Science talk 5: Marijke Haverkorn - Galactic magnetism
15.30 - 16.00	Science talk 6: Andreas Brunthaler - Galactic structure
16.00 - 16.30	Science talk 7: Wouter Vlemmings - Galactic masers
16.30 - 16.40	Comfort break
16.40 - 17.10	Group discussion on science questions of the day
17.10 - 17.30	Pop-up poster presentations

Tuesday 20 May 2014

9.00 - 9.30	Science talk 8: Laurent Loinard - Nearby SF
9.30 -10.00	Science talk 9: Jill Rathborne - Massive SF
10.00 - 10.30	Science talk 11: Patrick Hennebelle - SF theory
10.30 - 11.00	Coffee
11.00 - 11.30	Science talk 10: Grazia Umana - Stellar astrophysics
11.30 - 12.00	Science talk 11: Tyler Bourke - Circumstellar disks

12.00 - 13.30	Lunch
13.30 - 13.55	Facilities talk 1: Justin Jonas - MeerKAT
13.55 - 14.20	Facilities talk 2: Naomi McClure-Griffiths - ASKAP
14.20 - 14.50	Coffee
14.50 - 15.15	Facilities talk 3: Roberto Pizzo - LOFAR
15.15 - 15.40	Facilities talk 4: Andrew Walsh - MWA
15.40 - 16.05	Facilities talk 5: Melvin Hoare - *e*-Merlin
16.05 - 16.30	Facilities talk 6: Huib Jan van Langevelde - VLBI (EVN + AVN)
16.30 - 17.00	Facilities talk 7: James Green - SKA
17.00 - 17.30	Group discussion on days talks and decide breakouts for next day

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Wednesday 21 May 2014

09.00 - 10.30	Parallel Break-out on science themes decided on Tuesday
10.30 - 11.00	Coffee
11.00 - 12.30	Parallel Break-out on science themes decided on Tuesday
12.00 - 13.30	Lunch
13.30 - 13.42	Contributed talk 1: Naomi-McClure-Griffiths - Galactic and Magellanic Evolution with the SKA
13.42 - 13.54	Contributed talk 2: John Dickey - The SKA 21-cm Absorption Survey of the Milky Way
13.54 - 14.06	Contributed talk 3: Gilles Joncas - Aspects of HI behaviour in the birth of molecular clouds
14.06 - 14.18	Contributed talk 4: Simon Bihr - THOR - The HI, OH, Recombination Line Survey of the Milky Way
14.18 - 14.30	Contributed talk 5: Andrew Walsh - Galactic science with the SKA between 20-25GHz
14.30 - 15.00	Coffee
15.00 - 16.30	Parallel Break-out on science themes decided on Tuesday
16.30 - 17.30	End of day summary

Thursday 22 May 2014

09.00 - 09.30	Enrique Vazquez-Semadeni - Perspectives on numerical modelling of the ISM
09.30 - 10.00	Gary Fuller - SKA-ALMA synergies
10.00 - 10.30	Diego Torres - SKA-CTA synergies
10.30 - 11.00	Coffee
11.00 - 12.30	Parallel Break-out on science themes decided on Tuesday
12.00 - 13.30	Lunch
13.30 - 13.42	Contributed talk 6: Claire Murray - Properties of the diffuse ISM: 21-SPONGE as an SKA pilot project
13.42 - 13.54	Contributed talk 7: Jan Forbrich - The Radio-X-ray Connection in Young Stellar Objects: a Deep VLA/Chandra view of the Orion Nebula Cluster
13.54 - 14.06	Contributed talk 8: Valerio Ribeiro - Radio emission from stars
14.06 - 14.18	Contributed talk 9: Simon Ellingsen - The LBA and lessons for the AVN
14.18 - 14.30	Contributed talk 10: Ciriaco Goddi - TBD
14.30 - 15.00	Coffee
15.00 - 16.30	Parallel Break-out on science themes decided on Tuesday
16.30 - 17.30	End of day summary

2. Scientific Summary

The workshop was a success with stimulating and interesting science discussions and presentations. The SKA has the potential to make a tremendous impact on many key areas in the physics of the ISM, the early lives of stellar clusters, and stellar evolution. In the Milky Way the real step changes come in the transformative ability of the SKA in wide-area, sensitive high angular resolution spectroscopy, and in the unparalleled astrometric measurements in line and continuum. The SKA makes it possible to:

i) study the detailed flow of material through the atomic and ionised ISM.
ii) pinpoint the proper motion and parallax of low-mass YSOs in nearby clusters and spiral arms, and massive star forming regions throughout the Milky Way.
iii) open up the field of wide-area formaldehyde absorption mapping to create a high dynamic range map of the molecular gas density in the Milky Way.
iv) bring the study of stellar variability into the radio era.

Progress was made on a number of fronts, with extra material for already approved science book chapters and at least one new proposal for a compelling SKA science chapter on YSO astrometry. A number of use cases were also articulated (data processing, astrometry, and the possibility of total power measurements) and will be submitted to the SKA Project Office.

There was strong support to summarise and publicise the findings of the workshop via a meeting summary article in Astronomy & Geophysics (the monthly magazine of the RAS), and to also explore the possibility of preparing a white paper on SKA Galactic Science. It was proposed to write the white paper as a compilation of relevant SKA science chapters, with framing text to draw together the themes of the separate chapters and showcase the impact that SKA will have on the study of the Milky Way. To explore this idea, Naomi & Mark (and anyone else who wants to help) will canvas the opinion of the relevant chapter authors at the AASKA meeting. Steve Longmore volunteered to coordinate contributions to the white paper. The proposed timescale for the white paper was to have it finished on a similar timescale to the SKA science chapters, i.e. August/September.

Finally, there was also very strong support for the formation of a Galactic Plane (or Galactic Science) SKA Science Working Group. What would need to be demonstrated was a committed group of 10 active scientists plus a chair and co-chair. Mark agreed to explore the possibilities with the Project Office but cautioned that the SWG needed to focus on the highest impact science that the SKA enabled. A show of commitment was asked for and 15 people in the audience volunteered at varying degrees of commitment. It was realised that there were probably many other people who may be interested in this (some of whom who were not able to stay to the end of the meeting) and so it was again suggested to canvas relevant chapter authors at the AASKA meeting.

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

Name	First name	Institute	Country
Bihr	Simon	Max Planck Institute for Astronomy	Germany
Bourke	Tyler	SKA Organisation	United Kingdom
Brunthaler	Andreas	Max-Planck-Institut für Radioastronomie	Germany
Burningham	Ben	University of Hertfordshire	United Kingdom
Clark	Susan	Columbia University	United States
De Villiers	Helena	University of Hertfordshire	United Kingdom
Dickey	John	University of Tasmania	Australia
Ellingsen	Simon	University of Tasmania	Australia
Forbrich	Jan	University of Vienna	Austria
Fuller	Gary	University of Manchester	United Kingdom
Goddi	Ciriaco	JIVE	Netherlands

Goedhart	Sharmila	SKA Africa/ Northwest University	South Africa
Green	James	SKA Organisation	United Kingdom
Haverkorn	Marijke	Radboud Universiteit	Netherlands
Hennebelle	Patrick	CEA/Saclay	France
Hoare	Melvin	University of Leeds	United Kingdom
Hogerheijde	Michiel	Leiden Observatory	Netherlands
Imai	Hiroshi	Kagoshima University	Japan
Jonas	Justin	Rhodes University	South Africa
Joncas	Gilles	Université Laval	Canada
Klaassen	Pamela	Leiden Observatory	Netherlands
Kramer	Busaba	Max Planck Institute for Radio Astronomy	Germany
Loinard	Laurent	CRyA-UNAM	Mexico
Longmore	Steve	LJMU	United Kingdom
Mcclure-Griffiths	Naomi	CSIRO Astronomy & Space Science	Australia
Miville-Deschenes	Marc-Antoine	Institut d,Astrophysique Spatiale - CNRS	France
Molinari	Sergio	INAF-IAPS	Italy
Mottram	Joseph	Leiden Observatory	Netherlands
Murray	Claire	University of Wisconsin - Madison	United States
Oonk	Raymond	ASTRON	Netherlands
Peek	Joshua	Columbia University	United States
Rathborne	Jill	CSIRO Astronomy and Space Science	Australia
Redman	Matt	National University of Ireland Galway	Ireland
Ribeiro	Valerio	University of Cape Town	South Africa
Rygl	Kazi	ESTEC/ESA	Netherlands
Stinebring	Daniel	ASTRON // Oberlin College	Netherlands
Tachihara	Kengo	Nagoya University	Japan
Thompson	Mark	University of Hertfordshire	United Kingdom
Torres	Diego F.	Institute of Space Science	Spain
Traficante	Alessio	University of Manchester	United Kingdom
Umana	Grazia	INAF-OACT	Italy
Van Kempen	Tim	Leiden Observatory	Netherlands
Van Langevelde	Huib	JIVE/Leiden	Netherlands
Vazquez-Semadeni	Enrique	CRyA-UNAM	Mexico
Viti	Serena	University College London	United Kingdom
Vlemmings	Wouter	Chalmers University of Technology	Sweden
Walsh	Andrew	Curtin/ICRAR	Australia
Zijlstra	Albert	Jodrell Bank Centre for Astrophysics	United Kingdom

Confirmation by organiser: 

4. Financial Report / RadioNet3 contribution

RadioNet3 supported this conference with 3000 Euro.

5. Conference Proceedings and Web page

http://www.lorentzcenter.nl/lc/web/2014/631/info.php3?wsid=631&venue=Oort