Report from the event supported by RadioNet

TITLE	*THE BROAD IMPACT OF LOW FREQUENCY OBSERVING*
DATE:	*19 – 23 JUNE 2017*
LOCATION:	*BOLOGNA, ITALY*
MEETING WEBPAGE:	*http://www.astron.nl/lowfrequencyobserving2017/*
HOST INSTITUTE:	*IRA/INAF AND ASTRON*
RADIONET BENEFICIARY / NO:	~~*TO BE FILLED BY MANAGEMENT*~~ ASTRON/2 INAF/4

accepted on 12.7.2017

RadioNet has received funding from the EU's Horizon 2020 research and innovation programme under the grant agreement No 730562

Report:

1. SCIENTIFIC SUMMARY

From 19-23 June 2017, the conference 'The Broad Impact of Low Frequency Observing' took place at the Conference Center of the INAF/CNR research campus, in Bologna (Italy). The event was connected with and naturally followed the yearly RadioNet-supported LOFAR Science Meetings where results from the LOFAR science projects are presented and discussed. This year, the event expanded its scope and explored relevant links to some of the main facilities complementary to LOFAR including the MWA, the VLA, and VLBI networks in the radio, as well as some of the world's major observatories at other wavebands. In this respect, the event was cross disciplinary and fed the collaboration between radio astronomers and scientists working in other bands of the electromagnetic spectrum, disseminating the knowledge acquired in our field to the broader astronomical community and at the same time broadening the scientific horizon of radio astronomers.

The programme covered highlights from low frequency observations obtained with a range of observatories around the world. These are significantly impacting science areas including the Epoch of Reionization & Cosmology, Pulsars, The Milky Way and Nearby Galaxies, AGN, Star Formation, Clusters, Sun, Ionosphere, Cosmic rays, and Transients. A few highlights from a few sessions are presented below.

The EoR talks showed that the many telescopes that are trying to detect the EoR signal are facing many technical challenges. Specifically, foreground removal is one key challenge for 21cm EoR experiments. In this respect, it was important to see that the LOFAR-EOR project has made important steps forward and showed (thanks to better foreground analysis) LOFAR EoR upper limits a factor of 4 better with 3 nights data than previously with 13 nights of data (see Fig. 1).

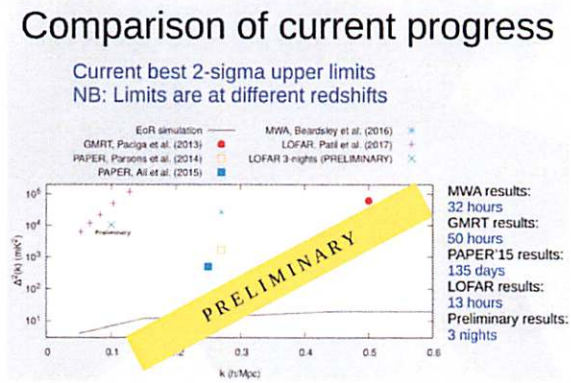

Figure 1: LOFAR EoR upper limits compared to those obtained with other instruments

The Pulsar talks showed the important physics that can be done at low frequency (probe magnetosphere, probe Interstellar medium, find msec pulsars) and how the improvement in computational power is now making all this possible.

The Milky Way session highlighted the very important studies that can be pursued at low frequencies for HII regions, supernova remnants and magnetic fields.

The Solar talks showed the capability of the current arrays to detect and study the powerful processes on the Sun at low radio frequencies, like solar radio bursts (see e.g. Fig. 2 from D. Morosan).

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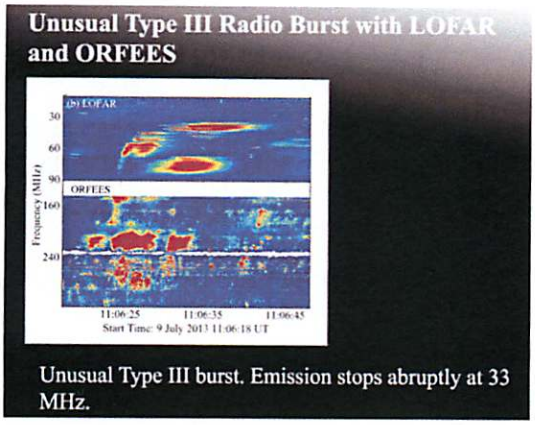

Figure 2: Type III Radio bursts detected with LOFAR and ORFEES

The low frequency regimes are key to detect and study diffuse radio sources in clusters that are not directly associated with radio galaxies. The origin of these sources is not yet well understood. The Galaxy cluster session showed many examples of such Mpc sources now imaged for the first time in great detail and sensitivity at low frequency thanks to the capabilities of the new observatories available. A very important highlight of this session was the image at 150 MHz of the Sausage cluster, by D. Hoang and collaborators. The image is presented here below.

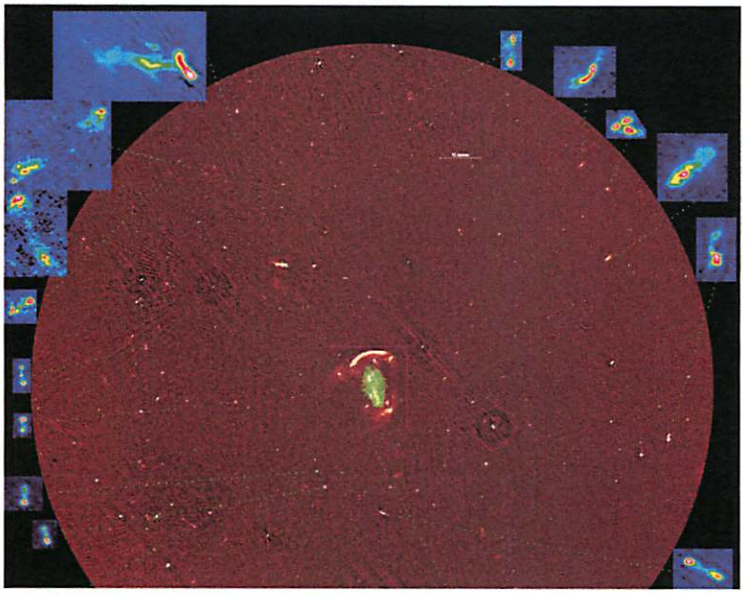

Figure 3: the Sausage cluster as detected by LOFAR at 150 MHz

The science talks as well as the special session on Instrument & algorithms provided a comprehensive overview of the versatility and state-of-the-art technical capabilities available at low frequencies. With LOFAR unmistakably in a world-leading role, it is clear that the breadth of all available observing facilities and data analysis techniques together is contributing to the broad science impact being made.

This conference fitted well in the RadioNet framework as it had a major focus on the scientific results achieved using also RadioNet facilities, including LOFAR, and had a cross-disciplinary nature, as highlighted above.

Participants advertised the most relevant scientific results presented at the conference through Twitter. The very long list of posts can be found at: https://twitter.com/hashtag/TBILFO2017

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The event web page is http://www.astron.nl/lowfrequencyobserving2017/

2. AGENDA OF THE EVENT

The agenda of the event is reported below. The info on institute/country affiliation of the speakers can be found in the attendance list in Section 3.

Science Programme - Low Frequency Observing 2017

Monday, 19 June 2017

09.00-09.10	Filippo Zerbi Rene Vermeulen	Introduction/welcome

Epoch of Reionisation and Cosmology (Chair: R. Wayth)

09.10-09.40	Jonathan Pritchard	Epoch of Reionisation and Cosmology at low frequencies
09.40-10.00	Andre Offringa	The EoR with LOFAR
10.00-10.20	Cathryn Trott	Progress towards the EoR with the Murchison Widefield Array
10.20-10.35	Emma Chapman	Foreground Removal in the Epoch of Reionisation
10.35-11.05	Break	
11.05-11.25	Gianni Bernardi	The Epoch of Reionization Array (HERA)
11.25-11.45	Benedetta Ciardi	EoR Simulations and 21cm Absorption
11.45-12.00	Nichole Barry	Sky-Based Calibration and the EoR Power Spectrum: Contamination, Mitigation, and Implications
12.00-12.15	Marta Spinelli	Polarised synchrotron simulations for EoR experiments
12.15-12.30	Carolin Hofer	Canadian Hydrogen Intensity Mapping Experiment
12.30-12.45	Andrei Mesinger	Learning about astrophysics with the cosmic 21-cm signal
12.45-14.15	Lunch	

Pulsars **(Chair: H. Falcke)**

14.15-14.45	Jason Hessels	The low-frequency pulsar renaissance
14.45-15.05	Ramesh Bhat	Pulsar Astronomy with the Murchison Widefield Array
15.05-15.25	Catarina Tiburzi	Pulsar Timing with LOFAR
15.25-15.40	Cees Bassa	Searching for millisecond pulsars towards Fermi gamma-ray sources wth LOFAR
15.40-16.10	Break	
16.10-16.30	Bhaswati Bhattacharyya	Pulsars and Transients with the GMRT
16.30-16.45	Chia Min Tan	LOTAAS Periodicity Search for Pulsars
16.45-17.00	Mengyao Xue	A Low Frequency Census of Southern Pulsars with the MWA
17.00-17.15	Elliott Polzin	LOFAR study of the eclipses of black widow pulsar J1810+1744

Exoplanets

17.15-17.35	Jean-Mathias Griessmeier	Observations of extrasolar planets at low radio frequencies
17.35-17.50	Jake Turner	The search for radio emission from exoplanets using LOFAR low-frequency beam-formed observations

19:00 - 21:00 Welcoming reception
Hotel I Portici
Via dell'Indipendenza 69
40121 Bologna

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Tuesday, 20 June 2017

The Milky Way and Nearby Galaxies **(Chair: R. Dettmar)**

09.00-09.30	Marijke Haverkorn	The Milky Way at low frequencies
09.30-09.45	Raymond Oonk	Uncovering the diffuse CO-dark gas in cold interstellar clouds
09.45-10.05	George Heald	Low-frequency observations of nearby galaxies
10.05-10.20	David Mulcahy	Exploring the low frequency nature of nearby galaxies with observations and modelling
10.20-10.35	Krzysztof Chyzy	Flattening of low-frequency spectra of nearby galaxies
10.35-10.50	Fatemeh Tabatabaei	Cloud-Scale GMRT Survey of M33: Unveiling the Low-Frequency Properties of the ISM
10.50-11.20	Break	

Solar Physics

11.20-11.50	Divya Oberoi	The Sun and the Heliosphere at Low Radio Frequencies
11.50-12.10	Diana Morosan	LOFAR Tied array Imaging and Spectroscopy of Solar RadioBursts
12.1-12.25	Eduard Kontar	The First Imaging Spectroscopy of the Solar Radio Burst Fine Structures
12.25-12.40	Gottfried Mann	Tracking of an electron beam through the solar corona with LOFAR
12.40-12.55	Nicoline Chrysaphi	Imaging Spectroscopy of a Type II solar radio burst observed by LOFAR
12.55-14.25	Lunch	

Instruments and Algorithms **(Chair: I. Prandoni)**

14.25-14.55	Robert Braun	Low Frequency Science with the Square Kilometre Array
14.55-15.10	Jason Hessels	LOFAR 2.0: A premier low-frequency facility for the next decade
15.15-15.35	Andre Offringa	Low frequency imaging
15.35-15.50	Jess Broderick	LOFAR MSSS: A low-frequency counterpart to NVSS
15.50-16.20	Break	
16.20-16.35	Paul Hancock	The GLEAM survey: Imaging and Calibration challenges
16.35-16.55	Neal Jackson	Long baselines at low frequencies
16.55-17.10	Franz Kirsten	Low Frequency VLBI: fringes between MWA and GMRT
17.10-17.25	Francesco de Gasperin	Imaging at 50 MHz: the LOFAR LBA survey

Wednesday, 21 June 2017

Instruments and Algorithms (cont.) **(Chair: R. Vermeulen)**

09.00-09.20	Cyril Tasse	Direction dependent imaging and Wirtinger calibration for low frequency radio surveys
09.20-09.40	Huub Rottgering	Deep and sharp imaging at low radio frequencies with LOFAR. Studies of clusters, AGN and starburst galaxies
09.40-09.55	Tim Shimwell	Galaxy Clusters in the LOFAR Two-metre Sky Survey

Clusters

09.55-10.25	Gianfranco Brunetti	Non thermal phenomena in galaxy clusters at low radio frequencies
10.25-10.40	Melanie Johnston-Hollitt	A Catalogue of Relics and Halos from the MWA GLEAM Survey
10.40-11.10	Break	
11.10-11.30	Franco Vazza	The low-frequency view on the complex life of galaxy cluster

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		outskirts
11.30-11.45	Kamlesh Rajpurohit	A spectacular view of the Toothbrush: filaments and inhomogeneous magnetic fields
11.45-12.00	Gabriella di Gennaro	Deep in the (un)known: the Sausage Cluster
12.00-12.15	Christopher Riseley	Magnetic Fields in High-z Clusters: A Full-Polarization Study of MACS J0025.4-1222 with the GMRT
12.15-12.30	Annalisa Bonafede	New radio emission from the cluster MACSJ0717+3745 – LOFAR observations
12.30-12.45	Virginia Cuciti	New detections of radio halos in galaxy clusters with low frequency GMRT observations

12:45-14:15 Lunch

Social activities after lunch

20:00 - ~22:30 Conference dinner
Palazzo Isolani
Via Santo Stefano 16
40125 Bologna

Thursday, 22 June 2017

AGN Physics **(Chair: M. Johnston-Hollitt)**

09.00-09.30	Raffaella Morganti	The physics and lifecycle of local radio AGN
09.30-09.45	Joseph Callingham	Dying young and frustrated? A low radio frequency view of 'young' radio galaxies
09.45-10.00	Simona Giacintucci	Tracing multiple AGN outbursts at low frequency in cool-core clusters
10.00-10.15	Rajan Chhetri	Sub-arcsec compact source properties using wide field interplanetary scintillation with the MWA
10.15-10.30	Jeremy Harwood	The low-frequency perspective of FR II radio galaxies

10.30-11.00 Break

AGN and galaxy evolution

11.00-11.50	Elaine Sadler	Radio AGN populations and their evolution
11.30-11.50	Wendy Williams	Deep LOFAR imaging and AGN evolution
11.50-12.05	Sarah White	The MWA GLEAM 4-Jy Sample
12.05-12.20	David Nisbet	The Determination of the Luminosity Function of Jet-mode AGN out to a Redshift of z~2
12.20-12.35	Kimberly Emig	The first detections of radio recombination lines at cosmological distances

12.35-14.05 Lunch

14.05-14.25	Vernesa Smolcic	VLA-COSMOS 3 GHz Large Project: Cosmic evolution of radio AGN and star forming galaxies since z~5
14.25-14.45	Tom Muxlow	Star-formation Across Cosmic Time: Initial Results from the e-MERGE Study of the μJy Radio Source Population
14.45-15.00	Gulay Gurkan	LOFAR/H-ATLAS: The low-frequency radio luminosity -- star-formation rate relation
15.00-15.15	Volker Heesen	The low-frequency radio continuum' star formation rate relation in nearby galaxies with LOFAR
15.15-15.30	Nick Seymour	The Surprising Complexity of the Radio Emission from StarForming Galaxies

15.30-16.00 Break

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Ionosphere & Upper Atmosphere **(Chair: H. Rothkaehl)**

16.00-16.20	Maaijke Mevius	Probing ionospheric structures using LOFAR
16.20-16.40	Huib Intema	SPAM - 10 years of ionospheric calibration
16.40-16.55	Christopher Jordan	Ionospheric characterisation above the Murchison Radio Observatory with EoR datasets
16.55-17.10	Maria Rioja	Ionospheric studies and calibration using MWA and LOFAR observations
17.10-17.30	Richard Fallows	From the Sun to the Earth: Observing Space Weather with LOFAR
17.30-17.45	Brian Hare	LOFAR for Lightning Interferometry and Mapping

19:00-20:00 Public lecture (in Italian) by Daria Guidetti (INAF-IRA)
Auditorium Biagi
In the main Bologna Public Library Sala Borsa
Piazza del Nettuno, 3, 40124 Bologna

Friday, 23 June 2017

Cosmic Rays **(Chair: A. Rowlinson)**

09.00-09.30	Heino Falcke	Cosmic Ray studies at low frequencies
09.30-09.50	Tim Huege	Precision measurements of cosmic-ray air showers with SKA-low
09.50-10.10	Stijn Buitink	Radio detection of neutrinos with LOFAR and ARIANNA
10.10-10.25	Olaf Scholten	Status and perspectives of the radio detection technique of cosmic ray air showers
10.25-10.40	Arthur Corstanje	Improving the accuracy of cosmic-ray composition measurements with LOFAR

10.40-11.10 Break

Transients

11.10-11.40	Tara Murphy	Exploring the dynamic radio sky with SKA pathfinders
11.40-12.00	Emily Petroff	Fast Radio Bursts: Recent Discoveries and Future Prospects
12.00-12.20	Ralph Wijers	Finding transients in the image plane at low radio frequencies
12.20-12.35	Steve Croft	Breakthrough Listen
12.35-12.50	David Kaplan	Faint, Highly-Polarized Flares from UV Ceti with the MWA

12.50-13.00 Concluding remarks

3. PARTICIPANTS

200 participants attended the conference. Gender balance played an important role in the event. 32% of the participants, 30% of the SOC and 50% of the LOC were women. 48 participants were phd, and 48 were post-doc. 34 experts in various astrophysical areas, 38.5% of which are women, have been invited to give review and invited talks. The country affiliation of the participants is shown in the chart below.

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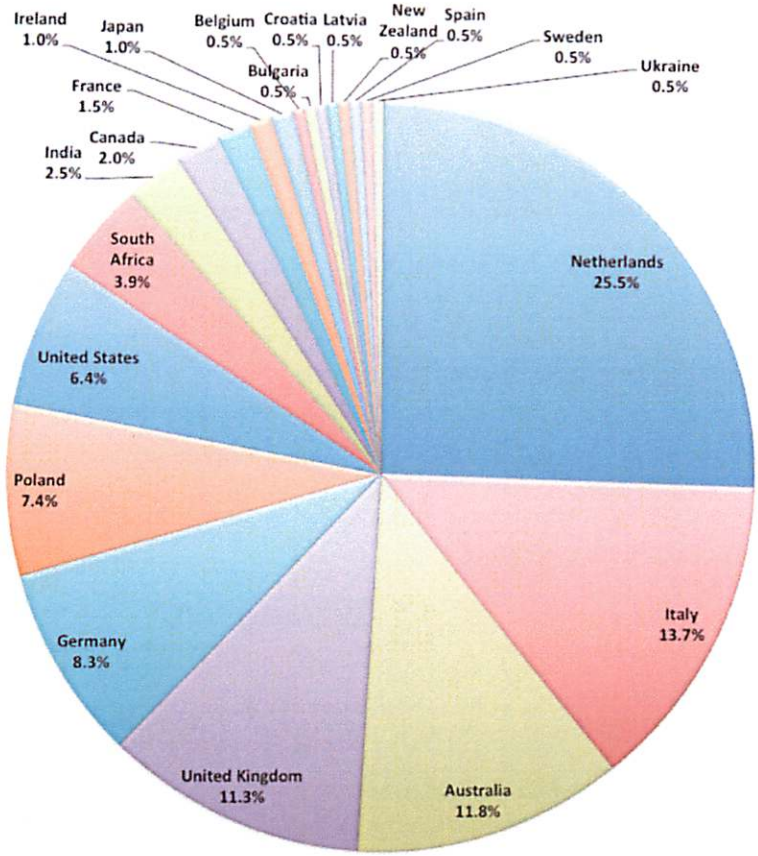

Figure 4: country affiliation of the participants

The conference picture taken at the conference venue is shown below.

Figure 5: Conference picture taken on Tuesday 20 June at the conference venue.

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The attendance list (signed by R. Pizzo, main organizer of the event) is below.

Attendance list:

Josh	Albert	Leiden Observatory	Netherlands
Jasper	Annyas	ASTRON	Netherlands
Maria	Arias	API	Netherlands
Nichole	Barry	University of Washington	United States
Cees	Bassa	ASTRON	Netherlands
Gianni	Bernardi	SKA SA & Rhodes University	South Africa
Philip	Best	Institute for Astronomy	United Kingdom
Dmitrijs	Bezrukovs	Ventspils International Radio Astronomy Center	Latvia
Ramesh	Bhat	ICRAR, Curtin University	Australia
Bhaswati	Bhattacharyya	NCRA-TIFR	India
Leszek	Blaszkiewicz	University of Warmia and Mazury in Olsztyn	Poland
Annalisa	Bonafede	IRA INAF	Italy
Etienne	Bonnassieux	Observatoire de Paris - Rhodes University	France
Tom	Booler	ICRAR/Curtin	Australia
Andrea	Botteon	IRA-INAF	Italy
Robert	Braun	SKA Organisation	United Kingdom
Michiel	Brentjens	ASTRON	Netherlands
Marisa	Brienza	ASTRON - Kapteyn Institute (RUG)	Netherlands
Jess	Broderick	ASTRON	Netherlands
Gianfranco	Brunetti	IRA-INAF	Italy
Stijn	Buitink	VUB	Belgium
Ruby	Byrne	University of Washington	United States
Gabriela	Calistro Rivera	Leiden Observatory	Netherlands
Joseph	Callingham	ASTRON	Netherlands
Therese	Cantwell	Jodrell Bank Centre for Astrophysics	United Kingdom
Rossella	Cassano	INAF- Istituto di Radioastronomia	Italy
Massimo	Cau	Unibo/IRA-INAF	Italy
Emma	Chapman	Imperial College London	United Kingdom
Song	Chen	University of Western Cape	South Africa
Rajan	Chhetri	Curtin University/CAASTRO	Australia
Nicolina	Chrysaphi	University of Glasgow	United Kingdom
Krzysztof	Chyzy	Astronomical Observatory, Jagiellonian University	Poland
Benedetta	Ciardi	Max Planck Institute for Astrophsicsy	Germany
Alex	Clarke	Jodrell Bank Centre for Astrophysics	United Kingdom
John	Conway	Onsala / Chalmers University	Sweden
Arthur	Corstanje	Radboud University Nijmegen	Netherlands
Stve	Croft	UC Berkeley	United States

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Virginia	Cuciti	INAF-IRA	Italy
Pratik	Dabhade	Leiden Observatory	Netherlands
Bartosz	Dabrowski	Space Radio-Diagnostics Research Centre, Universit	Poland
Daniele	Dallacasa	DIFA UniBO & IRA - INAF	Italy
Francesco	de Gasperin	Leiden University	Netherlands
Ralf-Juergen	Dettmar	Ruhr-University Bochum	Germany
Gabriella	Di Gennaro	Harvard-Smithsonian Center for Astrophysics	United States
Philip	Diamond	SKA Organisation	United Kingdom
Tammo Jan	Dijkema	ASTRON	Netherlands
Richard	Dodson	ICRAR/UWA	Australia
Alexander	Drabent	TLS Tautenburg	Germany
Cosmos	Dumba	Thuringer Landessternwarte Tautenburg	Germany
Jaroslaw	Dyks	Nicolaus Copernicus Astronomical Center	Poland
Philip	Edwards	CSIRO	Australia
Kimberly	Emig	Leiden Observatory	Netherlands
Heino	Falcke	Radboud University	Netherlands
Richard	Fallows	ASTRON	Netherlands
Luigina	Feretti	Istituto di Radioastronomia	Italy
Alexandros	Filothodoros	University of Zielona Gora	Poland
Jakob	Gelszinnis	TLS Tautenburg	Germany
Marie-Lou	Gendron-Marsolais	Universite de Montreal	Canada
Marisa	Geyer	University of Oxford	United Kingdom
Simona	Giacintucci	Naval Research Laboratory	United States
Isabella	Gioia	INAF-IRA	Italy
Gabriele	Giovannini	DIFA-Bologna University & IRA/INAF	Italy
Marcello	Giroletti	INAF IRA	Italy
Myriam	Gitti	University of Bologna & INAF	Italy
Jean-Mathias	Griessmeier	LPC2E	France
Trienko	Grobler	Rhodes University	South Africa
Daria	Guidetti	INAF Istituto di Radioastronomia	Italy
Gulay	Gurkan Uygun	CSIRO Astronomy and Space Science	Australia
Marcin	Hajduk	University of Warmia and Mazury in Olsztyn	Poland
Catherine	Hale	University of Oxford	United Kingdom
Paul	Hancock	ICRAR - Curtin University	Australia
Martin	Hardcastle	University of Hertfordshire	United Kingdom
Brian	Hare	University of Groningen	Netherlands
Jeremy	Harwood	ASTRON	Netherlands
Marijke	Haverkorn	Radboud University	Netherlands
George	Heald	CSIRO Astronomy and Space Science	Australia
Volker	Heesen	Hamburger Sternwarte	Germany
Jason	Hessels	ASTRON	Netherlands
Duy	Hoang	Leiden Observatory	Netherlands

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Matthias	Hoeft	Thuringer Landessternwarte	Germany
Carolin	Hofer	Department of Physics and Astronomy, University of	Canada
Tim	Huege	KIT	Germany
Marco	Iacobelli	ASTRON	Netherlands
Balthasar	Indermuehle	CSIRO Astronomy and Space Science	Australia
Huib	Intema	Leiden Observatory	Netherlands
Carole	Jackson	ASTRON	Netherlands
Neal	Jackson	University of Manchester, JBCA	United Kingdom
Marek	Jamrozy	Jagiellonian University	Poland
Simon	Johnston	CSIRO	Australia
Melanie	Johnston-Hollitt	Victoria University of Wellington	New Zealand
Christopher	Jordan	ICRAR/Curtin	Australia
David	Kaplan	University of Wisconsin-Milwaukee	United States
Franz	Kirsten	ICRAR-Curtin	Australia
Uli	Klein	AIfA, Univ. Bonn	Germany
Georgi	Kokotanekov	University of Amsterdam	Netherlands
Eduard	Kontar	University of Glasgow	United Kingdom
Kamen	Kozarev	Institute of Astronomy, Bulgarian Academy of Scien	Bulgaria
Andrzej	Krankowski	University of Warmia and Mazury	Poland
Mark	Kuiack	Anton Pannekoek Institute for Astronomy	Netherlands
Dharam	Lal	National Centre for Radio Astrophysics (NCRA-TIFR)	India
Wojciech	Lewandowski	Janusz Gil Institute of Astronomy, University of Z	Poland
Jack	Line	University of Melbourne	Australia
Justin	Linford	The George Washington University	United States
Colin	Lonsdale	MIT Haystack Observatory	United States
Alessandro	Maini	INAF-IRA	Italy
Soumyajit	Mandal	Leiden Observatory	Netherlands
Gottfried	Mann	Leibniz-Institut fuer Astrophysik Potsdam (AIP)	Germany
Lucia	Marchetti	UWC	South Africa
Barbara	Matyjasiak	CBK PAN	Poland
Alexandar	Mechev	Leiden Observatory	Netherlands
Andrei	Mesinger	Scuola Normale Superiore	Italy
Maaijke	Mevius	ASTRON	Netherlands
Daniele	Michilli	ASTRON / U. Amsterdam	Netherlands
Yoshimitsu	Miyashita	Kumamoto University	Japan
Jan David	Mol	ASTRON	Netherlands
Sean	Mooney	University College Dublin	Ireland
Miguel	Morales	University of Washington	United States
Raffaella	Morganti	ASTRON/Kapteyn Inst	Netherlands
Diana	Morosan	Trinity College Dublin	Ireland
Vanessa	Moss	ASTRON	Netherlands
David	Mulcahy	Jodrell Bank Centre for Astrophysics	United Kingdom

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Tara	Murphy	University of Sydney	Australia
Tom	Muxlow	JBCA	United Kingdom
Blazej	Nikiel-Wroczynski	Astronomical Observatory, Jagiellonian University	Poland
David	Nisbet	Institute for Astronomy	United Kingdom
Menno	Norden	ASTRON	Netherlands
Divya	Oberoi	National Centre for Radio Astrophysics - TIFR	India
Emmanuel	Ocran	University of Cape Town	South Africa
Andre	Offringa	ASTRON	Netherlands
Raymond	Oonk	ASTRON / Leiden	Netherlands
Emanuela	Orru	ASTRON	Netherlands
Urszula	Pajdosz	Astronomical Observatory of the Jagiellonian Unive	Poland
Rosita	Paladino	INAF-IRA	Italy
Emily	Petroff	ASTRON	Netherlands
Bart	Pindor	University of Melbourne	Australia
Roberto	Pizzo	ASTRON	Netherlands
Irene	Polderman	Radboud University Nijmegen	Netherlands
Elliott	Polzin	University of Manchester	United Kingdom
Andrea	Possenti	INAF/Astronomical Observatory of Cagliari	Italy
Isabella	Prandoni	IRA-INAF	Italy
Jonathan	Pritchard	Imperial College	United Kingdom
Giuseppe	Pupillo	IRA - INAF	Italy
Kamlesh	Rajpurohit	Thuringer Landessternwarte Tautenburg	Germany
Roberto	Ricci	INAF - IRA	Italy
Simona	Righini	IRA-INAF	Italy
Maria J.	Rioja	ICRAR-UWA / CSIRO / OAN	Australia
Christopher	Riseley	CASS/Perth	Australia
Marzia	Rivi	University College London	United Kingdom
Carole	Roskowinski	Torun Centre for Astronomy	Poland
Anna	Rothkaehl	CBK PAN	Poland
Huub	Rottgering	Leiden Observatory	Netherlands
Antonia	Rowlinson	ASTRON & UvA	Netherlands
Ilaria	Ruffa	IRA/INAF	Italy
Elaine	Sadler	University of Sydney	Australia
Pedro	Salas	Leiden observatory	Netherlands
Federica	Savini	University of Hamburg	Germany
Arno	Schoenmakers	ASTRON	Netherlands
Olaf	Scholten	KVI-CART/Univ. Groningen	Netherlands
Dominik	Schwarz	Bielefeld University	Germany
Nick	Seymour	ICRAR/Curtin	Australia
Timothy	Shimwell	Leiden University	Netherlands
Aleksandar	Shulevski	ASTRON	Netherlands
Thilo	Siewert	Bielefeld University	Germany
Anna	Skrzypczak	Janusz Gil Institute of Astronomy University of Zie	Poland

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Vernesa	Smolcic	University of Zagreb	Croatia
Marta	Spinelli	University of Western Cape	South Africa
Matteo	Stagni	IRA-INAF	Italy
Carlo	Stanghellini	IRA-INAF	Italy
Dan	Stinebring	Oberlin College	United States
Fatemeh	Tabatabaei	IAC	Spain
Chia Min	Tan	Jodrell Bank Centre for Astrophysics	United Kingdom
Cyril	Tasse	Observatoire de Paris	France
Sander	ter Veen	ASTRON	Netherlands
Beatrice	Terni de Gregory	IRA-Bologna	Italy
Marjan	Tibbe	ASTRON	Netherlands
Caterina	Tiburzi	MPIfR/Bielefeld University	Germany
MCarmen	Toribio	Leiden Observatory	Netherlands
Steven	Tremblay	Curtin University	Australia
Cathryn	Trott	ICRAR-Curtin	Australia
Jake	Turner	University of Virginia	United States
Mattia	Vaccari	UWC	South Africa
Matthijs	van der Wiel	ASTRON	Netherlands
Franco	Vazza	IRA/INAF	Italy
Tiziana	Venturi	INAF, IRA	Italy
Rene	Vermeulen	ASTRON / ILT	Netherlands
Tessa	Vernstrom	University of Toronto	Canada
Christian	Vocks	Leibniz-Institute for Astrophysics Potsdam	Germany
Randall	Wayth	ICRAR/Curtin University	Australia
Jennifer	West	University of Toronto	Canada
Glenn	White	Open University, UK and The Rutherford Appleton La	United Kingdom
Sarah	White	ICRAR/Curtin	Australia
Amanda	Wilber	Hamburger Sternwarte	Germany
Ralph	Wijers	University of Amsterdam	Netherlands
Michael	Wilensky	University of Washington	United States
Wendy	Williams	University of Hertfordshire	United Kingdom
Michael	Wise	ASTRON	Netherlands
Mengyao	Xue	ICRAR-Curtin	Australia
Shintaro	Yoshiura	Kumamoto University	Japan
Alessandra	Zanichelli	INAF - Istituto di Radioastronomia	Italy
Kristian	Zarb-Adami	Oxford	United Kingdom
Pietro	Zucca	ASTRON	Netherlands

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4. RADIONET FINANCIAL CONTRIBUTION

The RadioNet contribution has covered lunches and coffee breaks for a group of participants. The selected participants are female and/or experts (i.e. invited speaker) and/or PhD students. In total, these are 113 persons. The list is reported below.

FirstName	FamilyName	Male/female	Expert	Country	Position
Josh	Albert	male		Netherlands	phd
Maria	Arias	female		Netherlands	phd
Nichole	Barry	female		United States	phd
Bhaswati	Bhattacharyya	female		India	faculty
Annalisa	Bonafede	female		Italy	other
Andrea	Botteon	male		Italy	phd
Robert	Braun	male	expert	United Kingdom	faculty
Marisa	Brienza	female		Netherlands	phd
Gianfranco	Brunetti	male	expert	Italy	faculty
Stijn	Buitink	male	expert	Belgium	faculty
Ruby	Byrne	female		United States	phd
Gabriela	Calistro Rivera	female		Netherlands	phd
Therese	Cantwell	female		United Kingdom	phd
Rossella	Cassano	female		Italy	faculty
Massimo	Cau	male		Italy	phd
Emma	Chapman	female		United Kingdom	postdoc
Rajan	Chhetri	male		Australia	postdoc
Nicolina	Chrysaphi	female		United Kingdom	phd
Benedetta	Ciardi	female	expert	Germany	faculty
Alex	Clarke	male		United Kingdom	phd
Arthur	Corstanje	male		Netherlands	phd
Virginia	Cuciti	female		Italy	phd
Pratik	Dabhade	male		Netherlands	phd
Gabriella	Di Gennaro	female		United States	phd
Alexander	Drabent	male		Germany	phd
Cosmos	Dumba	male		Germany	phd
Kimberly	Emig	female		Netherlands	phd
Heino	Falcke	male	expert	Netherlands	faculty
Richard	Fallows	male	expert	Netherlands	postdoc
Luigina	Feretti	female		Italy	faculty
Alexandros	Filothodoros	male		Poland	phd
Jakob	Gelszinnis	male		Germany	phd
Marie-Lou	Gendron-Marsolais	female		Canada	phd
Marisa	Geyer	female		United Kingdom	phd

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Simona	Giacintucci	female		United States	faculty
Isabella	Gioia	female		Italy	postdoc
Myriam	Gitti	female		Italy	faculty
Jean-Mathias	Griessmeier	male	expert	France	faculty
Daria	Guidetti	female		Italy	postdoc
Gulay	Gurkan Uygun	female		Australia	postdoc
Catherine	Hale	female		United Kingdom	phd
Marijke	Haverkorn leaves Tues	female	expert	Netherlands	faculty
Jason	Hessels	male	expert	Netherlands	faculty
Carolin	Hofer	female		Canada	phd
Tim	Huege	male	expert	Germany	faculty
Huib	Intema	male	expert	Netherlands	postdoc
Carole	Jackson	female		Netherlands	other
Neal	Jackson	male	expert	United Kingdom	faculty
Melanie	Johnston-Hollitt	female		New Zealand	faculty
Georgi	Kokotanekov	male		Netherlands	phd
Mark	Kuiack	male		Netherlands	phd
Jack	Line	male		Australia	phd
Soumyajit	Mandal	male		Netherlands	phd
Lucia	Marchetti	female		South Africa	postdoc
Barbara	Matyjasiak	female		Poland	postdoc
Alexandar	Mechev	male		Netherlands	phd
Maaijke	Mevius	female	expert	Netherlands	postdoc
Daniele	Michilli	male		Netherlands	phd
Yoshimitsu	Miyashita	male		Japan	phd
Sean	Mooney	male		Ireland	phd
Raffaella	Morganti	female	expert	Netherlands	faculty
Diana	Morosan	female	expert	Ireland	postdoc
Vanessa	Moss	female		Netherlands	postdoc
Tara	Murphy	female		Australia	faculty
Tom	Muxlow	male	expert	United Kingdom	faculty
Blazej	Nikiel-Wroczynski	female		Poland	postdoc
David	Nisbet	male		United Kingdom	phd
Emmanuel	Ocran	male		South Africa	phd
Andre	Offringa	male	expert	Netherlands	postdoc
Emanuela	Orru	female		Netherlands	other
Urszula	Pajdosz	female		Poland	phd
Rosita	Paladino	female		Italy	faculty
Emily	Petroff	female	expert	Netherlands	postdoc
Irene	Polderman	female		Netherlands	phd
Elliott	Polzin	male		United Kingdom	phd
Isabella	Prandoni	female		Italy	faculty
Jonathan	Pritchard	male	expert	United Kingdom	faculty

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Kamlesh	Rajpurohit	female		Germany	phd
Simona	Righini	female		Italy	postdoc
Maria J.	Rioja	female		Australia	other
Marzia	Rivi	female		United Kingdom	postdoc
Carole	Roskowinski	female		Poland	phd
Anna	Rothkaehl	female		Poland	faculty
Huub	Rottgering	male	expert	Netherlands	faculty
Antonia	Rowlinson	female		Netherlands	faculty
Ilaria	Ruffa	female		Italy	phd
Elaine	Sadler	female		Australia	faculty
Pedro	Salas	male		Netherlands	phd
Federica	Savini	female		Germany	phd
Thilo	Siewert	male		Germany	phd
Anna	Skrzypczak	male		Poland	phd
Vernesa	Smolcic	male	expert	Croatia	faculty
Marta	Spinelli	female		South Africa	postdoc
Fatemeh	Tabatabaei	female		Spain	postdoc
Chia Min	Tan	female		United Kingdom	phd
Cyril	Tasse	male	expert	France	faculty
Beatrice	Terni de Gregory	female		Italy	phd
Marjan	Tibbe	female		Netherlands	other
Caterina	Tiburzi	female		Germany	postdoc
MCarmen	Toribio	female		Netherlands	postdoc
Cathryn	Trott	female		Australia	faculty
Jake	Turner	male		United States	phd
Mattia	Vaccari	female		South Africa	postdoc
Franco	Vazza	male	expert	Italy	postdoc
Tiziana	Venturi	female		Italy	faculty
Tessa	Vernstrom	female		Canada	postdoc
Jennifer	West	female		Canada	postdoc
Sarah	White	female		Australia	postdoc
Ralph	Wijers	male	expert	Netherlands	faculty
Amanda	Wilber	female		Germany	phd
Michael	Wilensky	male		United States	phd
Wendy	Williams	female	expert	United Kingdom	postdoc
Mengyao	Xue	female		Australia	phd

5. PUBLICATIONS

- *In case of future publication - please provide additional information: place & date. Remember to insert the acknowledgment of the RadioNet support:*

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