FP7- Grant Agreement no. 283393 - RadioNet3

<u>Project name</u>: Advanced Radio Astronomy in Europe

<u>Funding scheme</u>: Combination of CP & CSA

Start date: 01 January 2012 <u>Duration:</u> 48 month



Deliverable D3.5

Publication of presented papers, presentations on-line from 12th EVN Symposium

Due date of deliverable: 2014-08-31

Actual submission date: 2013-11-21

Deliverable Leading Partner: ISTITUTO NAZIONALE DI ASTROFISICA (INAF), IT

1 Document information

Document name: Publication of presented papers, presentations on-line from 12th

EVN Symposium

Type Report

WP 3 (SWG)

Authors Dr. Andrea Tarchi (INAF)

1.1 Dissemination Level

Dissemination Level			
PU	Public	Х	
PP	Restricted to other programme participants (including the Commission Services)		
RE	Restricted to a group specified by the consortium (including the Commission Services)		
со	Confidential, only for members of the consortium (including the Commission Services)		

1.2 Content

1	Dog	cument information	2
		Dissemination Level	
	1.2	Content	3
2	Rep	port	4
	2.1	Programme of the meeting	5
	2.2	Scientific report	9
	2.3	Meeting Photo	. 12
	2.4	Participant list	. 13
	2.5	Information of the EC financial contribution	. 16

2 Report

The Istituto di Radioastronomia (IRA) di Bologna and the Osservatorio Astronomico di Cagliari (OAC) of the Istituto Nazionale di Astrofisica (INAF), on behalf of the European VLBI Consortium, hosted the 12th European VLBI Network (EVN) Symposium and Users Meeting. The Conference took profit of the relevant financial contribution from the European Commission FP7 RadioNet3 project. The Conference was held from 7th to 10th of October at the Hotel Regina Margherita, in the centre of Cagliari. The latest scientific results and technical developments from VLBI, and, in particular, e-VLBI and space-VLBI (RadioAstron) outcomes were reported. The timing of this meeting coincided with the first successful observational tests of the Sardinia Radio Telescopes within the EVN, and with a number of results from new and upgraded radio facilities around the globe, such as e-MERLIN, ALMA, and the SKA pathfinders. The symposium was attended by 133 participants (Fig. 3) from all over the world, with the Asian community represented by more than 20 colleagues. The program of the meeting consisted of 70 oral contributions (including 8 invited speakers) and 50 posters that covered a very wide range of VLBI topics both in galactic and extragalactic astrophysics (e.g. AGN, stellar evolution from birth to death, astrometry, and planetary science) as well as technological developments and future international collaborations. The scientific program also included a visit to the 64-m Sardinia Radio Telescope, SRT, (Fig. 4) and the EVN Users Meeting, where astronomers provided useful feedback on various matters regarding EVN operations. A short summary of the main science highlights of the Symposium is reported below.

The abstracts of the oral and poster contributions are available online at:

http://evn2014.oa-cagliari.inaf.it/EVN2014/EVN2014_AbstractBook.pdf

The slides of the oral presentations are available online at the webpages:

http://evn2014.oa-cagliari.inaf.it/EVN2014/speakers.html

Upon request of the authors, mostly not to anticipate highly impact discoveries, a few contributions were not made publicly available.

Additionally, the proceedings of the symposium will be published in Proceedings of Science (http://pos.sissa.it), the open access online journal organized by SISSA, the International School for Advanced Studies based in Trieste. The published proceedings will b elisted under the RadioNet3 Dissemination Activities.

2.1 Programme of the meeting

Monday, October 6

18:00 Registration

Tuesday, October 7

08:00-08:45	Registration
08:45-08:55	Luigina Feretti / Andrea Tarchi (INAF-IRA/OAC) Welcome and opening addresses
08:55-09:15	Anton Zensus (MPIfR) EVN: Present and Future
SESSION: Low	luminosity AGN and starburst galaxiesChair A. Lobanov
09:15-09:35	Mar Mezcua (IAC) Revealing jet radio emission from intermediate-mass black holes Invited
09:35-09:50	Sandor Frey (FOMI Satellite Geodetic Observatory) Four hot DOGs eaten up with the EVN
09:50-10:05	Francesca Panessa (INAF-IAPS) On the origin of radio emission in Radio-Quiet AGN and their connection to X-rays
10:05-10:20	John McKean (ASTRON / Univ. of Groningen) Testing galaxy formation at the highest angular resolution with gravitational lensing
10:20-10:35	Megan Argo (JBCA) Things that go bump in the night: the curious case of NGC660
10:35-11:15	Coffee Break and Poster Session
Chair A. Szomo	ru
11:15-11:30	Franco Mantovani (MPIfR / INAF-IRA) EVN observations of weak blazars
11:30-11:45	Magdalena Kunert-Bajraszewska (Torun Centre for Astronomy) Broad absorption line (BAL) quasars as a class of low luminosity AGNs
11:45-12:00	Naim Ramirez-Olivencia (IAA-CSIC) EVN imaging of the LIRGI sample
12:00-12:15	Rob Beswick (JBCA) LeMMINGs e-MERLIN survey of nearby galaxies
12:15-12:30	Tom Muxlow (JBCA) The e-MERGE Galaxy Evolution Survey
12:30-14:00	Break for Lunch
SESSION: Pow	erful AGN, jets and gamma-ray emission
Chair A. Zensus	
14:00-14:20	Monica Orienti (INAF-IRA) Radioemission of relativistic jets and gamma-ray connection Invited
14:20-14:35	Thomas P. Krichbaum (MPIfR) Millimeter VLBI observations: Black Hole Physics and the Origin of Jets
14:35-14:50	Marcello Giroletti (INAF-IRA) An EVN survey of hard spectrum gamma ray sources
14:50-15:05	Venkatessh Ramakrishnan (Aalto University Metsähovi Radio Observ.) Connection between parsec-scale radio jet and gamma-ray flares in the blazar
	//=0 00=

1156+295

15:05-15:20	Biagina Boccardi (MPIfR) High resolution mm-VLBI imaging of Cygnus A
15:20-15:35	Anne-Kathrin Baczko (Dr. Remeis Observatory/ECAP/Univ. Würzburg) VLBI Observations of NGC1052
15:35-15:50	Kazuhiro Hada (INAF-IRA/NAOJ) Continuing EVN monitoring of HST-1 in the jet of M87
15:50-16:20	Coffee Break and Poster Session
Chair JF. Desm	
16:20-16:35	Tuomas Savolainen (MPIfR)
	Imaging nearby AGN at ultra high resolution with RadioAstron
16:35-16:50	Yuri Kovalev (ASC of Lebedev Physical Institute) <u>AGN cores at extreme angular resolutions</u>
16:50-17:05	Gabriele Giovannini (Univ. Bologna / INAF-IRA) The nuclear structure of 3C84 with space VLBI (RadioAstron) observations
17:05-17:20	Jose L. Gomez (IAA-CSIC) Probing the innermost regions of AGN jets and their magnetic fields with
	RadioAstron
17:20-17:35	Kirill Sokolovsky (ASC Lebedev / SAI MSU) RadioAstron dual-band Space-VLBI observations of 3C 418 and TXS 2013+370
17:35-17:50	Cornelia Mueller (Univ. of Würzburg/ Dr Remeis Observatory / ECAP) TANAMI monitoring of Centaurus A: The complex dynamics in the inner parsec
	of an extragalactic jet
17:50-18:05	Ivan Agudo (JIVE)
	Signs of internal rotation and helical magnetic field in the inner jet of NRAO 150
Wednesday, (Databar 9
	JCIODELO
Wednesday, C	October 6
•	rful AGN, jets and gamma-ray emission (cont.) Chair M. Kunert-Bajraszewska
•	rful AGN, jets and gamma-ray emission (cont.) Chair M. Kunert-Bajraszewska Rocco Lico (Univ. Bologna/ IRA-INAF)
SESSION: Power	rful AGN, jets and gamma-ray emission (cont.) Chair M. Kunert-Bajraszewska
SESSION: Power	rful AGN, jets and gamma-ray emission (cont.) Chair M. Kunert-Bajraszewska Rocco Lico (Univ. Bologna/ IRA-INAF) Very Long Baseline Polarimetry and the Gamma-ray connection in Markarian
SESSION: Power 08:45-09:00	rful AGN, jets and gamma-ray emission (cont.) Chair M. Kunert-Bajraszewska Rocco Lico (Univ. Bologna/ IRA-INAF) Very Long Baseline Polarimetry and the Gamma-ray connection in Markarian 421 during the broadband campaign in 2011 Florent Mertens (MPIfR)
SESSION: Power 08:45-09:00	rful AGN, jets and gamma-ray emission (cont.) Chair M. Kunert-Bajraszewska Rocco Lico (Univ. Bologna/ IRA-INAF) Very Long Baseline Polarimetry and the Gamma-ray connection in Markarian 421 during the broadband campaign in 2011 Florent Mertens (MPIfR) Longitudinal and transverse velocity fields in parsec-scale jets Talvikki Hovatta (Aalto Univ. Metsahovi Radio Observ.) Spectral Index Distributions of Parsec-Scale AGN jets Jeffrey Hodgson (MPIfR)
SESSION: Power 08:45-09:00 09:00-09:15 09:15-09:30 09:30-09:45	rful AGN, jets and gamma-ray emission (cont.) Chair M. Kunert-Bajraszewska Rocco Lico (Univ. Bologna/ IRA-INAF) Very Long Baseline Polarimetry and the Gamma-ray connection in Markarian 421 during the broadband campaign in 2011 Florent Mertens (MPIfR) Longitudinal and transverse velocity fields in parsec-scale jets Talvikki Hovatta (Aalto Univ. Metsahovi Radio Observ.) Spectral Index Distributions of Parsec-Scale AGN jets Jeffrey Hodgson (MPIfR) 5 year Global 3-mm VLBI survey of Gamma-ray active blazars
SESSION: Power 08:45-09:00 09:00-09:15 09:15-09:30 09:30-09:45 09:45-10:00	rful AGN, jets and gamma-ray emission (cont.) Chair M. Kunert-Bajraszewska Rocco Lico (Univ. Bologna/ IRA-INAF) Very Long Baseline Polarimetry and the Gamma-ray connection in Markarian 421 during the broadband campaign in 2011 Florent Mertens (MPIfR) Longitudinal and transverse velocity fields in parsec-scale jets Talvikki Hovatta (Aalto Univ. Metsahovi Radio Observ.) Spectral Index Distributions of Parsec-Scale AGN jets Jeffrey Hodgson (MPIfR) 5 year Global 3-mm VLBI survey of Gamma-ray active blazars Andy Biggs (ESO) Mapping HI absorption at z=0.026 against a resolved background CSO
SESSION: Power 08:45-09:00 09:00-09:15 09:15-09:30 09:30-09:45	rful AGN, jets and gamma-ray emission (cont.) Chair M. Kunert-Bajraszewska Rocco Lico (Univ. Bologna/ IRA-INAF) Very Long Baseline Polarimetry and the Gamma-ray connection in Markarian 421 during the broadband campaign in 2011 Florent Mertens (MPIfR) Longitudinal and transverse velocity fields in parsec-scale jets Talvikki Hovatta (Aalto Univ. Metsahovi Radio Observ.) Spectral Index Distributions of Parsec-Scale AGN jets Jeffrey Hodgson (MPIfR) 5 year Global 3-mm VLBI survey of Gamma-ray active blazars Andy Biggs (ESO)
SESSION: Power 08:45-09:00 09:00-09:15 09:15-09:30 09:30-09:45 09:45-10:00 10:00-10:15	rful AGN, jets and gamma-ray emission (cont.) Chair M. Kunert-Bajraszewska Rocco Lico (Univ. Bologna/ IRA-INAF) Very Long Baseline Polarimetry and the Gamma-ray connection in Markarian 421 during the broadband campaign in 2011 Florent Mertens (MPIfR) Longitudinal and transverse velocity fields in parsec-scale jets Talvikki Hovatta (Aalto Univ. Metsahovi Radio Observ.) Spectral Index Distributions of Parsec-Scale AGN jets Jeffrey Hodgson (MPIfR) 5 year Global 3-mm VLBI survey of Gamma-ray active blazars Andy Biggs (ESO) Mapping HI absorption at z=0.026 against a resolved background CSO Paola Castangia (INAF-OA Cagliari) VLBI observations of the water megamaser in the nucleus of the Compton-thick
SESSION: Power 08:45-09:00 09:00-09:15 09:15-09:30 09:30-09:45 09:45-10:00 10:00-10:15	rful AGN, jets and gamma-ray emission (cont.) Chair M. Kunert-Bajraszewska Rocco Lico (Univ. Bologna/ IRA-INAF) Very Long Baseline Polarimetry and the Gamma-ray connection in Markarian 421 during the broadband campaign in 2011 Florent Mertens (MPIfR) Longitudinal and transverse velocity fields in parsec-scale jets Talvikki Hovatta (Aalto Univ. Metsahovi Radio Observ.) Spectral Index Distributions of Parsec-Scale AGN jets Jeffrey Hodgson (MPIfR) 5 year Global 3-mm VLBI survey of Gamma-ray active blazars Andy Biggs (ESO) Mapping HI absorption at z=0.026 against a resolved background CSO Paola Castangia (INAF-OA Cagliari) VLBI observations of the water megamaser in the nucleus of the Compton-thick AGN IRAS15480-0344
SESSION: Power 08:45-09:00 09:00-09:15 09:15-09:30 09:30-09:45 09:45-10:00 10:00-10:15 SESSION: Technology	rful AGN, jets and gamma-ray emission (cont.) Chair M. Kunert-Bajraszewska Rocco Lico (Univ. Bologna/ IRA-INAF) Very Long Baseline Polarimetry and the Gamma-ray connection in Markarian 421 during the broadband campaign in 2011 Florent Mertens (MPIfR) Longitudinal and transverse velocity fields in parsec-scale jets Talvikki Hovatta (Aalto Univ. Metsahovi Radio Observ.) Spectral Index Distributions of Parsec-Scale AGN jets Jeffrey Hodgson (MPIfR) 5 year Global 3-mm VLBI survey of Gamma-ray active blazars Andy Biggs (ESO) Mapping HI absorption at z=0.026 against a resolved background CSO Paola Castangia (INAF-OA Cagliari) VLBI observations of the water megamaser in the nucleus of the Compton-thick AGN IRAS15480-0344
SESSION: Power 08:45-09:00 09:00-09:15 09:15-09:30 09:30-09:45 09:45-10:00 10:00-10:15 SESSION: Techric Chair R. Porcas	rful AGN, jets and gamma-ray emission (cont.) Chair M. Kunert-Bajraszewska Rocco Lico (Univ. Bologna/ IRA-INAF) Very Long Baseline Polarimetry and the Gamma-ray connection in Markarian 421 during the broadband campaign in 2011 Florent Mertens (MPIfR) Longitudinal and transverse velocity fields in parsec-scale jets Talvikki Hovatta (Aalto Univ. Metsahovi Radio Observ.) Spectral Index Distributions of Parsec-Scale AGN jets Jeffrey Hodgson (MPIfR) 5 year Global 3-mm VLBI survey of Gamma-ray active blazars Andy Biggs (ESO) Mapping HI absorption at z=0.026 against a resolved background CSO Paola Castangia (INAF-OA Cagliari) VLBI observations of the water megamaser in the nucleus of the Compton-thick AGN IRAS15480-0344 nological issues and new developments Michael Lindqvist (OSO) Present status and technical directions of the EVN Invited Gino Tuccari (INAF-IRA)
SESSION: Power 08:45-09:00 09:00-09:15 09:15-09:30 09:30-09:45 09:45-10:00 10:00-10:15 SESSION: Techric Chair R. Porcas 10:15-10:35	rful AGN, jets and gamma-ray emission (cont.) Chair M. Kunert-Bajraszewska Rocco Lico (Univ. Bologna/ IRA-INAF) Very Long Baseline Polarimetry and the Gamma-ray connection in Markarian 421 during the broadband campaign in 2011 Florent Mertens (MPIfR) Longitudinal and transverse velocity fields in parsec-scale jets Talvikki Hovatta (Aalto Univ. Metsahovi Radio Observ.) Spectral Index Distributions of Parsec-Scale AGN jets Jeffrey Hodgson (MPIfR) 5 year Global 3-mm VLBI survey of Gamma-ray active blazars Andy Biggs (ESO) Mapping HI absorption at z=0.026 against a resolved background CSO Paola Castangia (INAF-OA Cagliari) VLBI observations of the water megamaser in the nucleus of the Compton-thick AGN IRAS15480-0344 nological issues and new developments Michael Lindqvist (OSO) Present status and technical directions of the EVN Invited
SESSION: Power 08:45-09:00 09:00-09:15 09:15-09:30 09:30-09:45 09:45-10:00 10:00-10:15 SESSION: Technor Chair R. Porcas 10:15-10:35 10:35-10:50 10:50-11:15	rful AGN, jets and gamma-ray emission (cont.) Chair M. Kunert-Bajraszewska Rocco Lico (Univ. Bologna/ IRA-INAF) Very Long Baseline Polarimetry and the Gamma-ray connection in Markarian 421 during the broadband campaign in 2011 Florent Mertens (MPIfR) Longitudinal and transverse velocity fields in parsec-scale jets Talvikki Hovatta (Aalto Univ. Metsahovi Radio Observ.) Spectral Index Distributions of Parsec-Scale AGN jets Jeffrey Hodgson (MPIfR) 5 year Global 3-mm VLBI survey of Gamma-ray active blazars Andy Biggs (ESO) Mapping HI absorption at z=0.026 against a resolved background CSO Paola Castangia (INAF-OA Cagliari) VLBI observations of the water megamaser in the nucleus of the Compton-thick AGN IRAS15480-0344 nological issues and new developments Michael Lindqvist (OSO) Present status and technical directions of the EVN Invited Gino Tuccari (INAF-IRA) DBBC3 Development (presented by W. Alef) Coffee Break and Poster Session
SESSION: Power 08:45-09:00 09:00-09:15 09:15-09:30 09:30-09:45 09:45-10:00 10:00-10:15 SESSION: Techric Chair R. Porcas 10:15-10:35 10:35-10:50	rful AGN, jets and gamma-ray emission (cont.) Chair M. Kunert-Bajraszewska Rocco Lico (Univ. Bologna/ IRA-INAF) Very Long Baseline Polarimetry and the Gamma-ray connection in Markarian 421 during the broadband campaign in 2011 Florent Mertens (MPIfR) Longitudinal and transverse velocity fields in parsec-scale jets Talvikki Hovatta (Aalto Univ. Metsahovi Radio Observ.) Spectral Index Distributions of Parsec-Scale AGN jets Jeffrey Hodgson (MPIfR) 5 year Global 3-mm VLBI survey of Gamma-ray active blazars Andy Biggs (ESO) Mapping HI absorption at z=0.026 against a resolved background CSO Paola Castangia (INAF-OA Cagliari) VLBI observations of the water megamaser in the nucleus of the Compton-thick AGN IRAS15480-0344 nological issues and new developments Michael Lindqvist (OSO) Present status and technical directions of the EVN Invited Gino Tuccari (INAF-IRA) DBBC3 Development (presented by W. Alef)

Solving the polarization problem in ALMA-VLBI observations 11:45-12:00 Leonid Petrov (ADNET Systems Inc.) Modeling of propagation in the neutral atmosphere for radio astronomy data analysis: a paradigm shift 12:00-12:15 Uwe Bach (MPIfR) Out of focus holography at Effelsberg 12:30 Bus to Is Alinos (Silius) 13:15-14:45 Lunch Buffet at Is Alinos 14:45-16:00 Presentations on the SRT at Is Alinos Chair A. Tarchi Andrea Possenti (INAF-OAC) Astronomy at the Observatory of Cagliari Nichi D'Amico (INAF-OAC/UniCA) SRT: Present status and prospects Isabella Prandoni (INAF-IRA) The SRT: Astronomical Validation & Scientific Perspectives 16:00 Bus to the SRT site 16:15 Visit at the SRT site (and, possibly, at Belvedere) 18:00 Bus to Cagliari Thursday, October 9 SESSION: Star Formation Chair F. Colomer 08:45-09:05 Luca Moscadelli (INAF-OAA) High-Mass Star Formation and Maser VLBI Invited 09:05-09:20 Anita Richards (JBCA / Univ. Manchester) Sub-mm maser VLBI: how do stellar winds break free from the star's gravity? 09:20-09:35 Kee-Tae Kim (Korea Astronomy & Space Science Inst.) KVN Observations of Class I Methanol Masers 09:35-09:50 Anna Bartkiewicz (Torun Centre for Astronomy) The methanol maser ring G23.657-0.127 after 9 years 09:50-10:05 Ciriaco Goddi (JIVE) 3D Gas Dynamics from Methanol Masers observed with the EVN reveals Rotating Disks around O-type Young Stars 10:05-10:20 Gabriele Surcis (JIVE) Magnetic field measurements at milliarcsecond resolution around massive young stellar objects

10:20-10:35 Jeoung Sook Kim (NAOJ)

Transition in the Outflow Evoution of the Massive Star-forming Region W75N

10:35-11:00 Coffee Break and Poster Session

SESSION: Current & future facilities and international collaborations

Chair C. Reynolds

11:00-11:15 Jonas Trüstedt (Universität Würzburg)

Blazars at Low Radio Frequencies

11:15-11:30 Do-Young Byun (KASI) Recent Activities of KVN

11:30-11:45 Matteo Stagni (IRA-INAF)

Towards the Italian VLBI network: first tests and perspectives

SESSION: Astrometry and planetary science

11:45-12:05 Maria Rioja (ICRAR)

Astrometry and new methods made possible by the new generation instruments

	Invited
12:05-12:20	Nobuyuki Sakai (NAOJ / Univ. of Tokyo) Direct comparison between VERA, VLBA and EVN astrometry results and an
	analytic gas dynamics model
12:20-12:35	Marcin Gawronski (Torun Centre for Astronomy) Project RISARD - the story so far
12:35-12:50	Guifre Molera Calves (JIVE) Scintillation of Venus and Mars Express radio signal on interplanetary and ionosphere plasma
12:50-14:30	Break for Lunch
SESSION: Super	novae and late stages of stellar evolution
Chair Z. Paragi	
14:30-14:50	Michael Bietenholz (HartRAO) VLBI of Supernovae and Gamma-Ray Bursts Invited
14:50-15:05	Miguel Perez-Torres (IAA-CSIC) Constraints on the progenitor system and the environs of SN 2014J from deep EVN and MERLIN radio observations
15:05-15:20	Jun Yang (OSO) VLBI detection of the internal shocks in nova V959 Mon
15:20-15:30	Break
15:30-17:00	Users Meeting
Chair T. Muxlow	
	Thomas Muxlow (JBCA) EVN Users Meeting
	Bob Campbell (JIVE) Software Correlation at JIVE & Real-time e-VLBI in the EVN
	Alastair Gunn (JBCA) EVN Scheduling
17:00-17:30	Coffee Break
For EVN	Symposium Football Match players and supporters
17:30	Bus to Football match pitch
18:00-19:30	Football match
19:30-20:30	Aperitif at the Hotel Panorama
20:30	Conference Dinner at the Hotel Panorama Restaurant (8th floor)

Friday, October 10

SESSION : Milky	Way Chair M. Bietenholtz
09:00-09:20	Mareki Honma (NAOJ) Maser Astrometry with VLBI and Galactic Structure Invited
09:20-09:35	Rebecca Azulay (Univ. de Valencia / MPIfR) Binary stars in moving groups
09:35-09:50	Benito Marcote (Univ. of Barcelona) Discovering the colliding wind binary HD 93129A
09:50-10:05	Danielle Fenech (Univ. College London) Preliminary results the COBRaS e-MERLIN legacy project
10:05-10:20	Sandra Etoka (Hamburg Observatory) Phase-lag distance of OH83.4-0.9 from eMERLIN and NRT observations
10:20-10:35	Jean-Francois Desmurs (IGN-OAN) SiO masers from AGB stars in the vibrationally excited v=1,v=2, and v=3 states

10:35-10:50	Soon-Wook Kim (KASI) Flaring Episodes of Cyg X-3 with Korean and Japanese VLBI
10:50-11:20	Coffee Break and Poster Session
SESSION: Pulsa	rs and transient objects
Chair M. Lindqvis	st .
11:20-11:40	Maria Massi (MPIfR) <u>Transient sources at the highest angular resolution</u> Invited
11:40-11:55	Javier Moldon (ASTRON) A pulsar wind nebula associated with PSR J2032+4127 as the powering source of TeV J2032+4130
11:55-12:10	Andrey Andrianov (ASC Lebedev Physical Inst.) Study of scattering material with RadioAstron-VLBI observations
12:10-12:25	Alexey Rudnitskiy (ASC Lebedev Physical Inst.) Preliminary results of giant pulse investigations from Crab pulsar with Radioastron
12:25-12:40	Olaf Wucknitz (MPIfR) Scattering as a nuisance and as a tool
12:40-13:00	H. van Langevelde (JIVE) <u>Concluding remarks</u>
13:00	End of Symposium

2.2 Scientific report

The scientific program was arranged into 9 sessions:

- Low luminosity AGN and starburst galaxies
- Powerful AGN, jets and gamma-ray emission
- Technological issues and new developments
- Star Formation
- Current & future facilities and international collaborations
- Astrometry and planetary science
- Supernovae and late stages of stellar evolution
- Milky Way
- Pulsars and transient objects

Invited speakers gave an overview of the main topic of each session together with a number of recent, worthy results achieved in the field.

The about 120 contributions (oral and posters) mostly covered all the possible scientific topics addressed by VLBI science and provided a complete overview of the EVN's scientific and technical results and potential (noticeably, the two days before the EVN Symposium, the EVN Technical and Operations Group - TOG - was held at the OAC, providing a complementary description of ongoing activities from the technical and operational side).

Indeed, the quality of all contributions was very high. Among these, some achievements have been recognised as true highlights and, below, a short description of some of these results is reported.

In the AGN-related topic, the possible presence of off-nuclear Intermediate-massive black-holes (IMBHs) in nearby galaxies has been indicated by quasi-simultaneous EVN+Chandra

observations of Ultra-Luminous X-ray sources (ULXs). In addition, in many talks, the importance of a synergy between multi-frequency, multi-epochs, observations, with VLBI in the cm and mm wavelength domains, and with high-energy satellites (e.g., Fermi/LAT) has been underlined. Indeed, many nice observational results and examples (e.g., in blazars), using such a synergy as a key-element to investigate the innermost regions of powerful AGN, where nuclear jets and outflows are produced, have been presented.

Results from spectral line VLBI of Galactic maser sources from different molecular species has been widely reported, in particular, in the two sessions related to 'Star formation' and 'Milky Way'. As a relevant example, EVN and VLBA observations were shown capable of mapping the detailed spatial distribution of molecular (water, methanol, and OH) masers in the massive star forming region G23.010.41. The outcome of this study permits to derive the kinematic structures and excitation condition of the gas, mandatory information to provide clues on the massive star formation mechanism, in particular, when complemented by ALMA measurements. While a scarcity of talks on spectral line VLBI observations of extragalactic objects was somewhat surprising, it is noticeable the result reported during the Symposium of the first VLBI map of the distribution of the water megamaser emission associated with the nucleus of the S0 galaxy IRAS15480-0344.

An impressive result has been also that reached through Global VLBI imaging, with an array comprised of 10 stations of the EVN, 10 stations of the VLBA and the GBT, of the gravitational lens MGJ0751+2761, located at a redshift of about 2 (Fig. 3).

The galaxy M82 has, once again, and not surprisingly, come out as a target for important discoveries and VLBI breakthroughs. Indeed, using e-MERLIN and the EVN, the rich population of Radio Supernovae (RSNe) and Supernova Remnants, present in this prototypical starburst galaxy, has been imaged with extremely-high sensitivity ad resolution (Fig. 4). Particularly impressive, in this framework, the important constraints on the progenitor system and environs obtained by using 'just' upper limits from deep EVN and eMERLIN images of the young Type Ia supernova SN2014J, recently found in this nearby galaxy.

Reported results from Astrometry, Transients, and Pulsar science have also contributed to underline the achievements and potential of EVN studies from the scientific point of view, while the technical presentations clearly highlighted the promising new developments and directions of the EVN.

Last, but surely not least, particular mention needs to be made to the contributions from Space VLBI, the Korean and Japanese VLBI Networks (KVN and VERA, respectively). The timing presence of reports on RadioAstron results, extensively presented during the afternoon of the first day of the Symposium, provided an impressive view of the capabilities, in terms of angular resolution resolution, reached by S-VLBI to image total intensity AND polarization of continuum emission in the core regions of AGN (e.g., 3C84, M87, and BLLac), bringing the measured brightness temperatures at the limit, when not beyond the limits, that can be explained by standard theoretical models for radio emission mechanisms. The participants from the Asian community have then demonstrated the large potential offered by the KVN and VERA to provide many information at VLBI scales on continuum and spectral line observations (in particular, to derive the distribution, kinematics, and proper motions of masers in star-forming regions, with an impact on our understanding of the Galactic structure), and representing also fundamental elements toward a possible future worldwide global VLBI Network.

As mentioned before, the EVN Symposium program also included a visit to the Sardinia Radio Telescope (SRT), one of the newest member of the EVN, introduced by three talks presenting the status and future of the SRT project, and the main results, with particular attention to VLBI, obtained, so far, by the ongoing Astronomical Validation tests.

The Proceedings of the 12th EVN Symposium will be published by Proceeding of Science (PoS) and made available with online open access at http://pos.sissa.it/cgibin/reader/conf.cgi?confid=230.

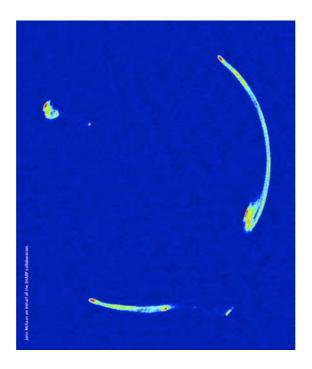


Figure 1: Global VLBI imaging of the gravitational lens MGJ0751+2761. Credits: John McKean / EVN / VLBA-GBT (NRAO).

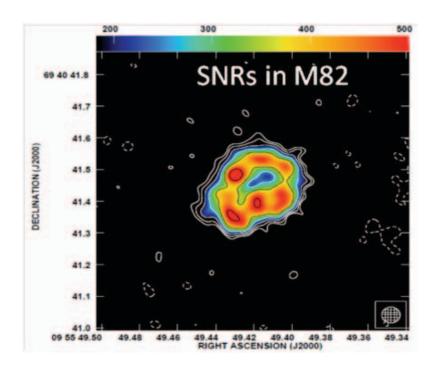


Figure 2: An e-MERLIN C-band image of typical radio supernova remnant in M82. Credits: R. Beswick / M. Perez-Torres / e-MERLIN LeMMINGs legacy programme.

2.3 Meeting Photo



Figure 3: Group picture of the Participants of the 12th EVN Symposium



Figure 4: Participants of the 12th EVN Symposium during the visit to the Sardinia Radio Telescope (SRT) site

2.4 Participant list

1	Francisco Jesus	Abellan	University of Valencia	Spain
2	Ivan	Agudo	JIVE	The Netherlands
3	Walter	Alef	MPIfR	Germany
4	Andrey	Andrianov	Astro Space Center (ASC LPI)	Russia
5	Megan	Argo	JBCA / Manchester	UK
6	Rebecca	Azulay	Universidad de Valencia / MPIfR	Spain
7	Uwe	Bach	MPIfR, Bonn	Germany
8	Anne-Kathrin	Baczko	Univ. Würzburg	Germany
9	Anna	Bartkiewicz	Torun Centre for Astronomy	Poland
10	Rob	Beswick	JBCA	UK
11	Michael	Bietenholz	HartRAO	South Africa
12	Andy	Biggs	ESO	Germany
13	Biagina	Boccardi	MPIfR	Germany
14	Marco	Bondi	INAF-IRA	Italy
15	Marta	Burgay	INAF - OA Cagliari	Italy
16	Do-Young	Byun	KASI	Korea
17	Bob	Campbell	JIVE	The Netherlands
18	Paola	Castangia	INAF-OA Cagliari	Italy
19	Maciej	Ceglowski	TCfA N. Copernicus University	Poland
20	Hikaru	Chida	NAOJ /Tokai University	Japan
21	Tiziana	Coiana	INAF - OA Cagliari	Italy
22	Francisco	Colomer	Instituto Geografico Nacional	Spain
23	Nichi	D'Amico	INAF - OACagliari	Italy
24	Jean-Francois	Desmurs	IGN-OAN	Spain
25	Richard	Dodson	KASI/ICRAR	Australia
26	Dmitry	Duev	JIVE	The Netherlands
27	Ina	Elsrud	Norwegian Mapping Authority	Norway
28	Sandra	Etoka	Hamburg Observatory	Germany
29	Danielle	Fenech	University College London	UK
30	Luigina	Feretti	INAF - IRA Bologna	Italy
31	Sandor	Frey	FOMI Satellite Geodetic Observatory	Hungary
32	Yoshitaka	Fujinaga	Yamaguchi University	Japan
33	Krisztina	Gabanyi	FOMI Satellite Geodetic Observatory	Hungary
34	Cristina	Garcia-Miro	Madrid Deep Speca Communication Complex NASA	Spain
35	Marcin	Gawronski	N. Copernicus University	Poland
36	Gabriele	Giovannini	Dip. di Fisica e Astronomia / INAF-IRA	Italy
37	Marcello	Giroletti	INAF-IRA	Italy
38	Ciriaco	Goddi	JIVE	Italy

39	Jose L.	Gomez	Instituto de Astrofisica de Andalucia (CSIC), Spain	Spain
40	Dhanya	Gopalakrishnan Nair	MPIfR	Germany
41	Federica	Govoni	INAF-Cagliari	Italy
42	Jose Carlos	Guirado	Universidad de Valencia	Spain
43	Alastair	Gunn	JBCA / Uni. Manchester	UK
44	Kazuhiro	Hada	IRA/NAOJ	Italy
45	Seog Tae	Han	KASI	Korea
46	Noelia	Herrera Ruiz	Astronomisches Institut der Ruhr-Universität Bochum	Germany
47	Jeffrey	Hodgson	MPIfR	Germany
48	Mareki	Honma	Mizusawa VLBI Observatory, NAOJ	Japan
49	Talvikki	Hovatta	Aalto University Metsahovi Radio Observatory	Finland
50	Liz	Humphreys	ESO	Germany
51	Taehyun	Jung	KASI	Korea
52	Vassilis	Karamanavis	MPIfR	Germany
53	Mark	Kettenis	JIVE	The Netherlands
54	Jeoung-Sook	Kim	NAOJ	Japan
55	Kee-Tae	Kim	KASI	Korea
56	Mikyoung	Kim	KASI	Korea
57	Soon-Wook	Kim	KASI	Korea
58	Motoki	Kino	KASI	Korea
59	Yuri	Kovalev	Astro Space Center of Lebedev Physical Institute	Russia
60	Shoko	Koyama	MPIfR	Germany
61	Evgeniya	Kravchenko	Astro Space Center	Russia
62	Thomas	Krichbaum	MPIfR	Germany
63	Magdalena	Kunert- Bajraszewska	N. Copernicus Univrsity	Poland
64	Alexander	Kutkin	ASC LPI	Russia
65	Rocco	Lico	Università di Bologna e IRA/INAF	Italy
66	Michael	Lindqvist	Onsala Space Observatory	Sweden
67	Elisabetta	Liuzzo	INAF-IRA Bologna	Italy
68	Andrei	Lobanov	MPIfR	Germany
69	Franco	Mantovani	MPIfR / INAF-IRA	Germany
70	Jon	Marcaide	Univ Valencia	Spain
71	Benito	Marcote	University of Barcelona	Spain
72	Ivan	Marti-Vidal	Onsala Space Observatory	Sweden
73	Maria	Massi	MPIfR	Germany
74	John	McKean	ASTRON / University of Groningen	The Netherlands
75	Florent	Mertens	MPIfR	Germany

76	Mar	Mezcua	Instituto de Astrofisica de Canarias	Spain
77	Enno	Middelberg	Ruhr-University Bochum	Germany
78	Carlo	Migoni	INAF-OACagliari	Italy
79	Javier	Moldon	ASTRON	The Netherlands
80	Guifre	Molera Calves	JIVE	The Netherlands
81	Julian Andres	Mora Diaz	Helmholtz Centre, Potsdam	Germany
82	Jack	Morford	University College London	UK
83	Luca	Moscadelli	INAF - OAA	Italy
84	Cornelia	Mueller	University of Wuerzburg	Germany
85	Matteo	Murgia	INAF-OACagliari	Italy
86	Tom	Muxlow	JBCA / Uni. Manchester	UK
87	Satomi	Nakahara	NAOJ/Kagoshima University	Japan
88	Kotaro	Niinuma	Yamaguchi University	Japan
89	Monica	Orienti	INAF-IRA Bologna	Italy
90	Tomoaki	Oyama	National Astronomical Observatory of Japan	Japan
91	Francesca	Panessa	IAPS-INAF	Italy
92	Zsolt	Paragi	JIVE	The Netherlands
93	Miguel	Perez-Torres	IAA-CSIC	Spain
94	Leonid	Petrov	ADNET Systems Inc.	USA
95	Antonis	Polatidis	ASTRON	The Netherlands
96	Sergio	Poppi	INAF - OA Cagliari	Italy
97	Richard	Porcas	MPIfR	Germany
98	Andrea	Possenti	INAF - OACagliari	Italy
99	Isabella	Prandoni	INAF - IRA Bologna	Italy
100	Venkatessh	Ramakrishnan	Aalto University Metsähovi Radio Observatory	Finland
101	Naím	Ramírez- Olivencia	IAA - CSIC	Spain
102	Cormac	Reynolds	ICRAR - Curtin University	Australia
103	Anita	Richards	JBCA / Uni. Manchester	UK
104	Maria	Rioja	OAN/ICRAR	Australia
105	Alan	Roy	MPIfR	Germany
106	Alexey	Rudnitskiy	Astro Space Center (ASC LPI)	Russia
107	Grzegorz	Rycyk	N. Copernicus University	Poland
108	Daisuke	Sakai	NAOJ / Univ. of Tokyo	Japan
109	Nobuyuki	Sakai	NAOJ	Japan
110	Tuomas	Savolainen	MPIfR	Germany
111	Satoko	Sawada-Satoh	NAOJ	Japan
112	Robert	Schulz	Universaet Wuerzburg	Germany
113	Bong Won	Sohn	KASI	Korea
114	Kirill	Sokolovskiy	ASC Lebedev / SAI MSU	Russia
115	Matteo	Stagni	INAF - IRA Bologna	Italy

116	Gabriele	Surcis	JIVE	The Netherlands
117	Arpad	Szomoru	JIVE	The Netherlands
118	Leif Morten	Tangen	Norwegian Mapping Authority	Norway
119	Andrea	Tarchi	INAF - OACagliari	Italy
120	Jonas	Trüstedt	Universität Würzburg	Germany
121	Minttu	Uunila	Metsähovi Radio Observatory	Finland
122	Ilse	van Bemmel	JIVE	The Netherlands
123	Huib	v. Langevelde	JIVE	The Netherlands
124	Harro	Verkouter	JIVE	The Netherlands
125	Petr	Voytsik	Astro Space Center of Lebedev Physical Institute	Russia
126	David	Williams	University of Southampton	UK
127	Pawel	Wolak	Torun Centre for Astronomy	Poland
128	Nick	Wrigley	Jodrell Bank Centre for Astrophysics	UK
129	Olaf	Wucknitz	MPIfR Bonn	Germany
130	Yuanwei	WU	NAOJ	Japan
131	Jun	Yang	Onsala Space Observatory, Sweden	Sweden
132	Anton	Zensus	Max-Planck-Institut für Radioastornomie	Germany
133	Guangyao	Zhao	KASI	Korea

While the majority of Participants came from Institutes located in several european countries, 21 collegues came from Asia (Korea and Japan), 7 from Russia, and a handful from the other three continents. In addition, positively, about 30 participants were either students (master, graduate, or PhD) or young postdocs. It is indeed a pleasure also to mention that a significant fraction (~30%) of oral contributions was presented by women, this fraction reaching a percentage larger than 50% (5/8) when invited speakers only are considered.

2.5 Information of the EC financial contribution

The Conference was co-sponsored by EC-FP7 RadioNet3. RadioNet3 provided:

- · Folders and associated material
- Financial support of 8500 Euros, which were used to waive the full Conference Fee for:

Francisco Jesus, Abellan (Spain) - Male

Rebecca, Azulay (Spain) - Female

Anne-Kathrin, Baczko (Germany) - Female

Biagina, Boccardi (Germany) - Female

Dhanya, Gopalakrishnan Nair (Germany) - Female

Austres Tarch

Jeffrey, Hodgson (Germany) - Male

Talvikki, Hovatta (Finland) - Female

Vassilis, Karamanavis (Germany) - Male

Soon-Wook, Kim (Korea) - Male

Shoko, Koyama (Germany) - Male

Rocco, Lico (Italy) - Male

Benito, Marcote (Spain) - Male

Mar, Mezcua (Spain) - Female

Luca, Moscadelli (Italy) - Male

Cornelia, Mueller (Germany) - Female

Monica, Orienti (Italy) - Female

Francesca, Panessa (Italy) - Female

Venkatessh, Ramakrishnan (Finland) - Male

Naím, Ramírez-Olivencia (Spain) - Male

Robert, Schulz (Germany) - Male

Jonas, Trüstedt (Germany) - Male

David, Williams (UK) - Male

Nick, Wrigley (UK) - Male

Florent, Mertens (Germany) - Male

Noelia, Herrera Ruiz (Germany) - Female

Maria, Massi (Germany) - Female

Julian Andres, Mora Diaz (Germany) - Male

Matteo, Stagni (Italy) - Male

Copyright

© Copyright 2014 RadioNet3

This document has been produced within the scope of the RadioNet3 Projects.

The utilization and release of this document is subject to the conditions of the contract within the 7th Framework Programme, contract no, 283393