

## PERSONAL INFORMATION

## Pietro Bolli



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## POSITION Technologist

## WORK EXPERIENCE

## From April 2013 Technologist

INAF – Arcetri Astrophysical Observatory (Florence)

- INAF coordinator of the Work Package “Antenna and LNA” for the Low Frequency Aperture Array (LFAA) Element of SKA1-LOW with contributions on: *i)* analysis/optimization/production of the SKALA4-AL antenna; *ii)* electromagnetic analysis of the array station performance; *iii)* development, in collaboration with CNR-IEIIT, of an aerial radio-frequency transmitter for the characterization and calibration of LFAA systems. This latter system has been intensively used, within a TECNO INAF project, in International technological demonstrators and pathfinders of the LFAA of SKA1-LOW, such as MAD (IT), AAVS0 (UK), pre-AAVS1 (UK) and LOFAR (NL)
- Participation, through International scientific collaborations, to the electromagnetic analysis of: *i)* the embedded element patterns for the LOFAR radio telescope including mutual coupling effects; *ii)* the performance of the SKA Mid-Frequency dish and of the 32-m Ghana radio telescope
- INAF responsible for the spectrum management and the spectrum monitoring activities for the protection of the frequency bands allocated to the radio astronomy service representing INAF within the Ministry of Economic Development and within the Committee on Radio Astronomy Frequencies (CRAF), an Expert Committee of the European Science Foundation
- Design and development of microwave components for radio astronomy, including cryogenic high temperature superconductor microwave devices and super-resolving Toraldo Pupils
- Involvement, with high responsibility, in committees and panels related to the INAF radio telescopes, e.g. chair of the Working Group to review the existing receivers and future developments at the INAF radio telescope facilities, president of the judging panel for the competitive tender for the refurbishing of the active surface of the Sardinia Radio Telescope

From January 2006  
to March 2013 Technologist

INAF – Cagliari Astronomical Observatory (Cagliari)

- Responsible for the Sardinia Radio Telescope project of the Work Packages “RFI monitoring” and “Time and Frequency” and member of the integrated activity groups for metrology, front-end and optics
- Participation to the technical commissioning of the Sardinia Radio Telescope
- Participation to several judging panels in competitive tenders for the supply of systems for the Sardinia Radio Telescope and technical director for the execution of the contract of the plant for the first light of Sardinia Radio Telescope
- Design and development of microwave components for radio astronomy, including cryogenic high temperature superconductor microwave devices (PI of a TECNO INAF project focused on this area)
- Involvement in the following national projects: *i)* “Astrophysics to the Quantum Limits” funded by the Italian Ministry of the Education, University and Research, where he contributed in the time-tagging system; *ii)* “Pre-phase-A study for the B-POL” funded by the Italian Space Agency, with the design and optimization of the optical system for the MID frequency instrument.

From May 2002  
to December 2005 Technologist

INAF – Institute of Radio Astronomy (Bologna)

- Activity on microwave front-ends for radio astronomy, e.g. design of the dual-frequency primary focus receiver for SRT, aperture efficiency characterization of the 43 GHz receiver for the Noto radio telescope
- Electromagnetic analysis of the optical systems of the Medicina, Noto and Sardinia Radio Telescopes
- Implementation of a rigorous procedure for the antenna noise temperature calculation of the Basic

## EDUCATION AND TRAINING

- 2000-2003** **Ph.D. on Computer Science and Telecommunications Engineering**  
University of Florence - Cycle XV - Tutors: Prof. G. Pelosi, Prof. G. Tofani and Prof. G. Grueff.  
Ph.D. thesis: "Electromagnetic Engineering for radio astronomy systems. Examples of applications"
- 1992-1999** **M.D. in Electronic Engineering**  
University of Florence - Tutors: Prof. G. Pelosi, Prof. G. Biffi Gentili, Eng. P. Gabellini, Eng. A. Naldini and Eng. S. Selleri  
M.D. thesis: "Study of non-linear phenomena in satellite platforms". Score 109/110.

## PERSONAL SKILLS

**Mother tongue(s)** Italian

**Other language(s)**

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B2	C1	C1	C1	C1

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user

**Communication skills** Good communication skills acquired through presentations of the research activity at National and International conferences and through scientific collaborations with National and International partners.

**Organisational / managerial skills** P. Bolli has been Principal Investigator of four competitive technological research projects (two of them funded within the TECNO INAF program) coordinating groups spread in different observatories/institutes and including also foreign collaborators. Furthermore, during his professional activity, he has supervised several post-doc researchers.

He has also served in scientific organizing committees of European Radio Astronomy Technical Workshops and as a co-Chair of the conference "The era of collaborative multi-wavelength and multi-messenger astronomy: science and technology" to be held in October 2019, Florence, Italy.

P. Bolli has also responsibilities in scientific committees like officer of the Commission J Radio Astronomy of the Italian Committee of Union Radio Scientifique Internationale (URSI) and INAF representative of the Committee on Radio Astronomy Frequencies (CRAF).

**Job-related skills** P. Bolli obtained his M.D. in Electronic Engineering (1999) and Ph.D. in Computer Science and Telecommunications Engineering (2003) both at the University of Florence (Italy). During this period, he acquired a very strong theoretical background in electromagnetic engineering, which has then been applied in two main radio astronomical projects: the Sardinia Radio Telescope (SRT) and the Square Kilometer Array (SKA).

In 2002, P. Bolli started his professional career, as a microwave engineer, at the National Institute for Astrophysics conducting research in the field of technology applied to radio astronomy in the framework of national and international projects. More in detail, after four years spent at the Institute of Radio Astronomy (Bologna) and seven at the Cagliari Astronomical Observatory, he is currently technologist with a permanent position at the Arcetri Astrophysical Observatory.

Since the begin of his career, he has mainly contributed, also with leadership roles, to the SRT project where he had the opportunity to follow the project from the design phase until the technical commissioning concluded in 2013.

Currently, he is involved in the SKA project leading the INAF efforts in the EM analysis of the Low Frequency Aperture Array (LFAA). His research is addressed to two main fields: antenna design of the low frequency instrument and characterization and calibration of LFAA using Unmanned Aerial Vehicle radio frequency sources.

Although the current focus is on the SKA project, he still collaborates, with responsibility roles, with the INAF single-dish radio telescopes; like for instance as scientific responsible of the Working Group 4 "Sistema ricevente a microonde compatto e simultaneo a tre-bande per i tre radiotelescopi Italiani" of the PON project for the upgrade of SRT and as chair of the Working Group appointed in 2016 by Section II (Radio Astronomy) of INAF Scientific Directorate to perform a review of existing receivers and future developments at the INAF radio telescope facilities.

He is co-author of over 130 scientific publications on the aforementioned topics, appeared in international referred journals (40) and international conferences (90).

P. Bolli along his career has both developed proprietary codes for specific applications and used commercial electromagnetic software for the design and optimization of microwave devices (CST MICROWAVE STUDIO, FEKO) and of antenna optics (GRASP). P. Bolli has got a deep experience in

## ADDITIONAL INFORMATION

## Abroad fellowships

- From June 2009 to July 2009: Honorary Research Fellow, School of Electronic, Electrical and Computer Engineering, University of Birmingham, UK.
- From July 2001 to September 2001: Visiting Fellow, National Astronomy and Ionosphere Center (NAIC), Cornell University, Ithaca, NY, USA.

## Involvement in scientific organizations

- RadioNet (European Horizon 2020 program): from December 2018 leader of the WP4.2 - Spectrum Management.
- International Astronomical Union (IAU): Member (since 2015), with affiliation in: i) Division B Facilities, Technologies and Data Science and ii) Division B Commission B4 Radio Astronomy.
- Union Radio Scientifique Internationale (URSI) Commission J Radio Astronomy of the Italian Committee: Substitute (2011-2017), Officer (since 2017).
- Committee on Radio Astronomy Frequencies (CRAF): Scientific Secretary (2005-2013), National Member (since 2005), Member of the Management Team (since 2018).
- Italian Society of Electromagnetism (SIEm): Member (since 2003).

### Participation to competitive research projects

- PI of the project "Un'antenna Italiana per il radio telescopio internazionale Square Kilometer Array (ANITA-SKA)". Funded by Fondazione Cassa di Risparmio di Firenze in 2018 with € 25.000.
- Member of the project "RADIO SKY 2020 - Fostering cooperation between Italy and South Africa through radio astronomy" (PI Tiziana Venturi). Funded by Ministry of Foreign Affairs and International Cooperation in 2018.
- Member of the project "Sistemi super-risolventi: Pupille Toraldo (PUTO)". Funded by Fondazione Cassa di Risparmio di Firenze in 2016 with € 50.000.
- PI of the project "Advanced calibration techniques for next generation low-frequency radio astronomical arrays". Funded by TECNO INAF 2014 with € 115.000.
- PI of the project "High Temperature Superconductor, a cutting edge technology for planar microwave devices". Funded by TECNO INAF 2009 with € 42.000.
- PI of the project "Design and fabrication of an optical system for photovoltaic concentrator". Funded by INAF Technological Transfer 2008 with € 35.000.
- Co-PI of the project "Evaluation and utilization of the Genetic Programming in the design of structures at radio-frequency and microwave". Funded by law 7 of the Regione Autonoma Sardegna, August 2007 with € 56.000.

### Responsibilities in INAF and external panels

- Director in 2020 for the execution of the contract "Supply of three compact and simultaneous three-band microwave receiving systems for the three Italian radio telescopes" assigned to Korea Astronomy and Space Science Institute – KASI. Total amount of the contract: € 2.7850.000.
- Member of the panel appointed in 2020 by INAF President to assess the impact of mega-constellation satellites to optical and radio astronomy.
- Since 2019, local representative for INAF-OAA of the INAF National Scientific Group "Tecnologie avanzate e strumentazione" (RSN5) and member of the council of INAF-OAA.
- Member of the consulting and coordination group for the Ministry of Education, University and Research in the area of "Electronics, Telecommunications and Digital Technologies" of the 2021-2027 National Research Plan (PNR).
- Scientific responsible of the Working Group 4 "Sistema ricevente a microonde compatto e simultaneo a tre-bande per i tre radiotelescopi Italiani" (budget € 3.000.000) of the PON project "Potenziamento del Sardinia Radio Telescope per lo studio dell'Universo alle alte frequenze radio" proposed by INAF and funded in 2019 by the Ministry of Education, University and Research.
- Member of the Working Group appointed in 2018 by Section II (Radio Astronomy) of INAF Scientific Directorate on the low bridging project of the Low Frequency Aperture Array of SKA.
- Member of the Working Group appointed in 2017 by Section II (Radio Astronomy) of INAF Scientific Directorate to define a roadmap on the possible participation of INAF in the International LOFAR Telescope.
- Chair of the Working Group appointed in 2016 by Section II (Radio Astronomy) of INAF Scientific Directorate to perform a review of existing receivers and future developments at the INAF radio telescope facilities.
- Panel member of the SKA-AADC Consortium for the Aperture Array Verification System (AAVS1) Detailed Design Review (October 2015).
- Italian coordinator of the WP "Antenna and LNA" within the AADC Consortium in charge of the design and construction of the LFAA element of SKA1-LOW (since 2014).
- INAF responsible for spectrum management and spectrum monitoring for the protection of the frequency bands allocated to radio astronomy service (since 2013).
- Technical director in 2010 for the execution of the contract "Supply, laying and integration in antenna of plant (helium lines, coaxial and Ethernet cables, optical fiber) for the first light of SRT" assigned to MT Mechatronics GmbH. Total amount of the contract: € 850.000.
- Responsible for the Sardinia Radio Telescope project of the WP5 - RFI monitoring (2006-2013) and of the WP6 - Time and Frequency (2010-2013).

- Invited talks**
- Invited talk on “Analysis of the optics of the antenna in Ghana: The Italian-South African combined effort” at Italy - South Africa Radio Astronomy Workshop Enhancing the collaboration in radio-astronomy between Italy and South Africa, (Pretoria, South Africa), October 24-25, 2018.
  - Invited talk on “Square Kilometer Array: EM design and analysis of the Low Frequency Aperture Array” at FEKO User Meeting, (Rome, Italy), May 15, 2018.
  - Invited talk on “Square Kilometer Array Project” at Meeting Electromagnetic Engineering Technology (MEET 2017), (Rome, Italy), September 26-27, 2017
  - Invited talk on “Analisi elettromagnetica di array di aperture a bassa frequenza per strumenti radio astronomici di nuova generazione” at ATCx Elettromagnetismo, (Rome, Italy), October 25, 2016.
  - Invited colloquium on “Radio frequency interference: spectrum management & spectrum monitoring” at Institute of Radio Astronomy (Bologna, Italy), February 29, 2016.
  - Invited talk on “Sardinia Aperture Array Demonstrator: Instrument Overview and Status” at Special Section “Array systems for Radio Astronomy and Space applications: design, measurement and calibration” of IEEE International Conference on Electromagnetics in Advanced Applications (ICEAA 2015), (Torino, Italy), September 7-11, 2015.
  - Invited talk on “The Sardinia Radio Telescope: overview and status,” at Special Section “EM Technologies for Astrophysics” of IEEE International Conference on Electromagnetics in Advanced Applications (ICEAA 2013), (Torino, Italy), September 9-13, 2013.
  - Invited talk on “International Radio Astronomical Spectrum Management Representation” at the 1<sup>st</sup> RadioNet3 European Radio Astronomy Technical Forum Workshop (ERATEC) “Radio Interference in Large Bandwidth Observations”, (Bonn, Germany), April 8-12, 2013.

- Responsibilities in conferences**
- Member of the Local Organizing Committee of the XXXIII General Assembly and Scientific Symposium (GASS) of the International Union of Radio Science, (Rome, Italy), 29 August – 5 September, 2020.
  - Co-Chairman of the conference “The era of collaborative multi-wavelength and multi-messenger astronomy: science and technology”, (Florence, Italy), October 22-24, 2019.
  - Member of the Organizing Committee of the meeting “SKA-low Station Calibration”, (Florence, Italy), July 1-3, 2019.
  - Co-Chairman of the session “MT\_A03 Array antennas, antenna systems and architectures” at the 13th European Conference on Antennas and Propagation (EuCAP), (Krakow, Poland), 31 March-5 April, 2019.
  - Member of the Scientific Organizing Committee of the Workshop “Super resolving systems: Toraldo pupils”, (Florence, Italy), October 12, 2017.
  - Member of the Scientific Organizing Committee of the Workshop “Detection and measurement of RFI in radio astronomy”, (Yebes Observatory, Guadalajara, Spain), June 8-9, 2017.
  - Member of the Scientific Organizing Committee of the 4<sup>th</sup> RadioNet3 European Radio Astronomy Technical Forum Workshop (ERATEC) “Multi-Frequency mm-wave Radio Telescope & Other Software Controlled Operations”, (Florence, Italy), October 5-7, 2015.
  - Member of the Scientific Organizing Committee of the 3<sup>rd</sup> RadioNet3 European Radio Astronomy Technical Forum Workshop (ERATEC) “Metrologies at Radio Astronomy Antennas”, (Gothenburg, Sweden), September 1-2, 2014.
  - Chairman of the session “Antennas 2” at the XVIII National meeting on Electromagnetism, (Benevento, Italy), September 6-10, 2010.

- Awards**
- Giorgio Barzilai prize at the XVI National meeting on Electromagnetism, 2006, as the best young scientist paper “Microwave holography for large reflector antennas through an iterative perturbative method based on the SVD”, P. Bolli, M. Loi, G. Montisci, G. Serra.

- Educational activity**
- Abilitazione Scientifica Nazionale 2016-2018: Qualified for Settore Concorsuale 09/F1 (electromagnetic fields) as professor II Fascia (since 12/07/2018 until 12/07/2024).
  - Seminar “Elettromagnetismo applicato alla Radio Astronomia: dal Sardinia Radio Telescope allo Square Kilometer Array”, course of “Antenna systems”, University of Florence, June 1, 2017.
  - Seminar “Elettromagnetismo applicato alla Radio Astronomia: dal Sardinia Radio Telescope allo Square Kilometer Array”, University of Pisa, May 19, 2017.
  - Seminar “Due esempi di progetti di punta della radioastronomia: SRT a livello italiano e SKA a livello mondiale”, course of “Antenna systems”, University of Florence, June 9, 2015 & June 1, 2018.
  - Seminar “Sistemi a microonde e onde millimetriche per la radioastronomia”, University of Pisa, May 13, 2013.
  - Seminar “Il sistema di monitoraggio delle interferenze radio presso SRT”, University of Florence, February 18, 2009 & December 9, 2009 & June 1, 2010.
  - Lecturer for the course “Laboratory of Radioastronomy” at the University of Cagliari during the academic year 2008-2009.
  - Co-relator of several M.D. thesis both at the University of Florence and at the University of Cagliari.



### Reviewer for journals and organizations

- Academic Editor of the International Journal of Antennas and Propagation published by Hindawi.
- Reviewer for the following International journals: IEEE Transactions on Electromagnetic Compatibility; International Journal of Antennas and Propagation; IET Microwaves, Antennas & Propagation; IEEE Antennas and Propagation Magazine; European Conference on Antennas and Propagation; Journal of Instrumentation.
- Referee for the Netherlands Organisation for Scientific Research (NWO).
- Member of the Register of Expert Peer-Reviewers for Italian Scientific Evaluation established at the Italian Ministry of Education, University, and Research.
- Member of the Expert Committee of Sardegna Ricerche.
- Member of examination boards for research grants at the Cagliari Astronomical Observatory and at the Arcetri Astrophysical Observatory.

### Participation to judging panels in competitive tenders

- Supply of a metrology system for the Sardinia Radio Telescope. Total amount of the tender: € 1.880.000 (May 2020, Astronomical Observatory of Cagliari). President of the panel.
- Refurbishing of the Active Surface of the Sardinia Radio Telescope. Total amount of the tender: € 1.610.762 (September 2016, Astronomical Observatory of Cagliari). President of the panel.
- Supply of a receiving system for AAVS1. Total amount of the tender: € 198.000 (March 2016, Institute of Radioastronomy). President of the panel.
- Supply of a system based on a Vector Network Analyzer for measuring microwave components on bench and in anechoic chamber. Total amount of the tender: € 200.000 (December 2014, Arcetri Astrophysical Observatory). Member of the panel.
- Service of engineering and industrialization of a prototypal receiving system in the framework of the project SKA-LFAA (Low Frequency Aperture Array). Total amount of the tender: € 81.970 (November 2014, Institute of Radioastronomy). President of the panel.
- Supply of a system based on a Vector Network Analyzer for measuring microwave components on bench and in anechoic chamber. Total amount of the tender: € 195.000 (October 2013, University of Milan). Member of the panel.
- Supply, laying and integration in antenna of plant (helium lines, coaxial and Ethernet cables, optical fiber) for the first light of SRT. Total amount of the tender: € 995.000 (August 2010, Cagliari Astronomical Observatory). Member of the panel.
- Supply of an active hydrogen maser. Total amount of the tender: € 181.000 (December 2009, Cagliari Astronomical Observatory). Member of the panel.
- Supply and installation of a RF shielded box in the new offices at the Sardinia Radio Telescope site. Total amount of the tender: € 140.000 (October 2009, Cagliari Astronomical Observatory). Member of the panel.
- Supply of two spectrum analyzers. Total amount of the tender: € 85.000 (July 2008, Cagliari Astronomical Observatory). Member of the panel.
- Supply of a mobile laboratory for the Radio Frequency Interference monitoring. Total amount of the tender: € 140.000 (July 2008, Cagliari Astronomical Observatory). Member of the panel.

### Participation to courses

- 1° Corso di Ingegneria dei Sistemi - Metodologie e Strumenti per la Progettazione di Grandi Sistemi per l'Astrofisica, INAF Villa Mellini, Rome, October 21-23, 2014.

## Publications

## Contribution to books and Editors

- [1a] P. Bolli, M. Beltrán, M. Burgay, P. Marongiu, T. Pisanu, C. Contavalle, A. Orfei, C. Stanghellini, G. Zacchirol, A. Zanichelli, *Receivers for Radio Astronomy: current status and future developments at the Italian radio telescopes*, INAF Press, ISBN: 978-88-9898-504-3 (online) / 978-88-98985-036 (printed), 2017.
- [2a] Special Section on "Radio Astronomy: A Continuous Demand for Breakthrough Technology", Editors: P. Bolli, N. D'Amico, R. Nesti, *URSI Radio Science Bulletin*, 362, September 2017.

## Refereed international publications

- [Papers along review process]
- [1b] A. Zanichelli, G. Serra, K.-H. Mack, M. Bartolini, F. Cantini, M. De Biaggi, F. Gaudiomonte, G. Nicotra, C. Bortolotti, M. Roma, S. Poppi, F. Bedosti, S. Righini, P. Bolli, A. Orlati, R. Ambrosini, C. Buemi, M. Buttu, P. Cassaro, P. Leto, A. Mattana, C. Migoni, L. Moscadelli, P. Platania, C. Trigilio, "Coordinated Site Monitoring and Common Strategies Towards Mitigation of Radio Frequency Interference at the Italian Radio Telescopes," *Radio Science*.
- [2b] F. Huang, P. Bolli, S. Mariotti, "Suppression of Spurious Harmonic Responses in Superconducting Microstrip Spiral Filters using Gold overlay and Stagger Tuning," *IET Microwaves, Antennas & Propagation*.
- [Papers published]
- [3b] P. Bolli, L. Mezzadrelli, J. Monari, F. Perini, A. Tibaldi, G. Virone, A. Mattana, M. Bercigli, L. Ciorba, P. Di Ninni, M. G. Labate, F. Paonessa, S. Rusticelli, M. Schiaffino, "Test-Driven Design of an Active Dual-Polarized Log-Periodic Antenna for the Square Kilometre Array," *IEEE Open Journal of Antennas and Propagation*, vol. 1, pp. 253-263, 2020. 10.1109/OJAP.2020.2999109
- [4b] P. Bolli, A. Orfei, A. Zanichelli, R. Prestage, S. Tingay, M. Beltran, M. Burgay, C. Contavalle, M. Honma, A. Kraus, M. Lindqvist, J.A. Lopez-Perez, P. Marongiu, T. Minamidani, S. Navarro, T. Pisanu, Z. Shen, W. Sohn, C. Stanghellini, T. Tzioumis, G. Zacchirol, "An International Survey of Front-End Receivers and Observing Performance of Telescopes for Radio Astronomy," *Publications of the Astronomical Society of the Pacific*, vol. 131, 1002, 2019. 10.1088/1538-3873/ab1f7e
- [5b] P. Di Ninni, P. Bolli, F. Paonessa, G. Pupillo, G. Virone, S.J. Wijnholds, "Electromagnetic analysis and experimental validation of the LOFAR radiation patterns," *International Journal of Antennas and Propagation*, vol. 2019, article ID 9191580. 10.1155/2019/9191580
- [6b] A. Melis, R. Concu, A. Trois, A. Possenti, A. Bocchinu, P. Bolli, M. Burgay, E. Carretti, P. Castangia, S. Casu, C. Cecchi Pestellini, A. Corongiu, N. D'Amico, E. Egron, F. Govoni, M.N. Iacolina, M. Murgia, A. Pellizzoni, D. Perrodin, M. Pilia, T. Pisanu, A. Poddighe, S. Poppi, I. Porceddu, A. Tarchi, V. Vacca, G. Aresu, M. Bachetti, M. Barbaro, A. Casula, A. Ladu, S. Leurini, F. Loi, S. Loru, P. Marongiu, P. Maxia, G. Mazzarella, C. Migoni, G. Montisci, G. Valente, G.P. Vargiu, "The Sardinia Roach2-based Digital Architecture for Radio Astronomy (SARDARA)," *Journal of Astronomical Instrumentation*, vol. 7, 1, 2018. 10.1142/S2251171718500046
- [7b] M. Venter, P. Bolli, "Electromagnetic analysis and preliminary commissioning results of the shaped dual-reflector 32-m Ghana radio telescope," *IoP Conference Series: Materials Science and Engineering*, vol. 321, 2018. 10.1088/1757-899X/321/1/012003
- [8b] P. Bolli, L. Cresci, F. Huang, S. Mariotti, D. Panella, "A High Temperature Superconductor notch filter for the Sardinia Radio Telescope," *Experimental Astronomy*, vol. 45, 2, pp. 165-176, April 2018. 10.1007/s10686-018-9578-1
- [9b] G. Virone, P. Bolli, F. Paonessa, G. Pupillo, S.J. Wijnholds, S. Matteoli, A. M. Lingua, J. Monari, G. Addamo, O. A. Peverini, "Strong Mutual-Coupling Effects on LOFAR: Modeling and In-Situ Validation," *IEEE Transactions on Antennas and Propagation*, vol. 66, 5, pp. 2581-2588, May 2018. 10.1109/TAP.2018.2816651.
- [10b] P. Bolli, G. Pupillo, F. Paonessa, G. Virone, S.J. Wijnholds, A.M. Lingua, "Near-field Experimental Verification of the EM Models for the LOFAR Radio Telescope," *IEEE Antennas and Wireless Propagation Letters*, vol. 17, 4, pp. 613-616, April 2018. 10.1109/LAWP.2018.2805999
- [11b] L. Olmi, P. Bolli, D. Mugnai, "Design of discrete and continuous super-resolving Toraldo pupils in the microwave range," *Applied Optics*, vol. 57, 9, pp. 2215-2222, 2018. 10.1364/AO.57.002215
- [12b] F. Huang, P. Bolli, L. Cresci, S. Mariotti, D. Panella, J.A. Lopez-Perez, P. Garcia, "A Superconducting Spiral Bandpass Filter designed by a Pseudo-Fourier Technique," *IET Microwaves, Antennas & Propagation*, vol. 12, 8, pp. 1293-1301, July 2018. 10.1049/iet-map.2017.0940
- [13b] E. de Lera Acedo, P. Bolli, F. Paonessa, G. Virone, E. Colin-Beltran, N. Razavi-Ghods, I. Aicardi, A. Lingua, P. Maschio, J. Monari, G. Naldi, M. Piras, G. Pupillo, "SKA Aperture Array Verification System; Electromagnetic modeling and beam pattern measurements using a micro UAV," *Experimental Astronomy*, vol. 45, 1, pp. 1-20, March 2018. 10.1007/s10686-017-9566-x
- [14b] I. Prandoni, M. Murgia, A. Tarchi, M. Burgay, P. Castangia, E. Egron, F. Govoni, A. Pellizzoni, R. Ricci, S. Righini, M. Bartolini, S. Casu, A. Corongiu, M. N. Iacolina, A. Melis, F. T. Nasir, A. Orlati, D. Perrodin, S. Poppi, A. Trois, V. Vacca, A. Zanichelli, M. Bachetti, M. Buttu, G. Comoretto, R. Concu, A. Fara, F. Gaudiomonte, F. Loi, C. Migoni, A. Orfei, M. Pilia, P. Bolli, E. Carretti, N. D'Amico, D. Guidetti, S. Loru, F. Massi, T. Pisanu, I. Porceddu, A. Ridolfi, G. Serra, C. Stanghellini, C. Tiburzi, S. Tingay, G. Valente, "The Sardinia Radio Telescope - From a technological project to a radio observatory," *Astronomy and Astrophysics*, vol. 608, December 2017. 10.1051/0004-6361/201630243
- [15b] L. Olmi, P. Bolli, L. Cresci, F. D'Agostino, M. Migliozi, D. Mugnai, E. Natale, R. Nesti, D. Panella, L. Stefani, "Laboratory measurements of super-resolving Toraldo pupils for radio astronomical applications," *Experimental Astronomy*, vol. 43, 3, pp. 285-309, June 2017. 10.1007/s10686-017-9535-4
- [16b] F. Buffa, P. Bolli, G. Sanna, G. Serra, "An atmosphere monitoring system for the Sardinia Radio Telescope," *Measurement Science and Technology*, vol. 28, 1, 25 November 2016. 10.1088/1361-6501/28/1/014004
- [17b] P. Bolli, G. Pupillo, G. Virone, M. Z. Farooqui, A. Lingua, A. Mattana, J. Monari, M. Murgia, G. Naldi, F. Paonessa, F. Perini, S. Pluchino, S. Rusticelli, M. Schiaffino, F. Schillirò, G. Tartarini, A. Tibaldi, "From MAD to SAD: The Italian experience for the low-frequency aperture array of SKA1-LOW," *Radio Science*, vol. 51, pp. 160-175, 2016. 10.1002/2015RS005922
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