Ing. Giovanni Naldi

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Sex Male | *Date of birth* 26/02/1981 | *Nationality* Italian

PERSONAL STATEMENT

Since 2007 I work on the development of technologies applied to Radio Astronomy. The main area of specialization is the design of digital architectures for data acquisition and signal processing with FPGA-based platforms. I have a deep knowledge of the principal elaboration techniques of digital data for radio astronomical applications like filtering, PFB channelization, correlation, beamforming, corner turning, I/O interfaces, etc… Very often the design activity has been carried out in parallel with experimental observation activity. So I had the opportunity to face all the aspects dealing with the acquisition and processing of "real" astronomical data like synchronization, data format interface, data reduction, etc…
I have also very good skills in the analysis, modelling and simulation of algorithms and complex systems through software tools.
I gained much experience also in the project of RF/Microwave circuitry and in the lab testing and measurements.
I have optimal capabilities to work in a team, to communicate and collaborate with colleagues in order to achieve the final results.

WORK EXPERIENCE

Period:	September 2018 – Present
Employer	Institute of Radio Astronomy (IRA-INAF, Bologna)
Position held:	III-Level Technologist (permanent position)

FRB Observations with the Northern Cross radio telescope

- A collaboration between INAF-IRA and INAF-OAC has started to use the Northern Cross radio telescope as an observing facility of Fast Radio Burst. In this effort, I've written some python code to automate the acquisition procedures, from the ADU board programming to the beam tracking schedule. Also, I've developed python software to convert raw data coming from acquisition board to filterbank format files suitable to be processed by Pulsar and FRB software pipelines.
- I've carried out many test observations in order to debug and validate the system. I am also deeply involved in the observation campaigns of repeating FRB sources.

SKA-LFAA, estimate of jitter in the clock distribution network

- The activity consisted in the study of the suitable test bench for the LFAA clock distribution network. First part of the work was focused on the correct setup of the devices of the chain and of the instruments to perform the clock jitter measure. Then it was necessary to modify the firmware of ADU Board in order to capture a large buffer of data at full ADC dynamic range.

BIRALES, support to the development of the digital acquisition and processing system and for experimental tests

- This activity is related to Space Surveillance and Tracking (SST) project for the space debris monitoring with a survey bistatic radar (BIRALES) whose receiving part is a part of the Northern Cross Radio Telescope. I've contributed realizing a simulation model of the antenna pattern of the multi-beam system.
- I've supported the set up and validation of the calibration and beamforming pipelines during radioastronomical observation campaigns.

Period:	September 2013 – August 2018
Employer	Institute of Radio Astronomy (IRA-INAF, Bologna)
Position held:	III-Level Technologist (temporary position)

PHAROS2, development of the digital backend based on ADU Board

- I've worked to use the ADU board as the digital acquisition and signal processing platform for PHAROS2 system. PHAROS2 is a C-band (4-8 GHz) cryogenically cooled low noise Phased Array Feed (PAF) demonstrator designed to operate from the primary focus of a large single-dish radio astronomy antenna. The digital backend implements a frequency domain beamformer capable of synthesizing four independent single-polarization beams on the sky by

combining 24 active elements of an array of Vivaldi antennas. Each beam covers an instantaneous IF bandwidth of ≈275 MHz across 375-650 MHz.
- This system has been tested and validated at the Medicina Radio Astronomy Station with the BEST-2 array, which allowed to lead on-field observations.

SKA ADU Board 1.2, compliance check of n. 25 Boards for AAVS1
- In the framework of SKA Aperture Array Verification System 1 (AAVS1) experiment I've carried out performance tests on 25 Analog to Digital Unit (ADU) Boards to verify and validate the compliance with the project requirements. For this activity a software package with a graphical interface has been written in order to measure the main performance parameters, automatically plot results on graphs and produce test reports.

Firmware for ROACH-1 (CASPER) used in MAD (Medicina Array Demonstrator) test campaign
- I've developed the firmware (ROACH-1) for acquisition and digital processing of data: frequency channelization using Polyphase Filter Banks, calibration to correct the phase of the different receiver chains, correlation of various baselines and beamforming of the two polarizations.
- MAD (Medicina Array Demonstrator) is a small 3×3 aperture array that was designed and installed in Italy to provide a test bench for array calibration and characterization in operative conditions (e.g., on the ground, with mutual coupling effects, etc.), using a novel procedure based on a micro Unmanned Aerial Vehicle (UAV) (hexacopter) flying in the far-field region of the Antenna Under Test (AUT). The other goals of the MAD project were: testing the analogue receiver chain in a realistic environment and implementing digital signal processing algorithms like correlation and beam-forming.

Characterization and performance evaluation of ADU board ver. 1.0
- For this activity I've written some software routines for the calculus of the main performance parameters (SNR, SFDR, ENOB, Cross-Talk, etc…) of the Analog to Digital Unit (ADU) Board that is part of the Italian Tile Processing Module (iTPM). The scope was to verify that the measured performances were into specifications and to compare two different kind of boards (with and without power amplifier on board before ADC).

JIG Board for ADU test
- I've supported the project of the RF part of the JIG board that will be used to automatically test and validate the performances of the ADU boards for SKA-AAVS1.
- I've worked also in the integration of the already developed analysis software into the software architecture for the board configuration and control.

Period:	March 2010 - August 2013
Employer	Institute of Radio Astronomy (IRA-INAF, Bologna)
Position held:	Temporary Research Fellow

Software simulations of beamforming algorithms
- Study, simulation (Matlab) and implementation of a beam-forming algorithm suitable to be applied in a GNSS receiver equipped with an array of receiving antennas, in order to improve the localization capabilities in particular urban conditions.
- The activity was carried out in the frame of a European Seventh Framework Programme (research for SMEs) project, GRABEL (GNSS Reconfigurable Antenna Based Enhanced Localization).

Feasibility study of multi-band antenna system for mobile phone application
- Preliminary study and design of a multi-band antenna system suitable to provide the functionality in GNSS (1572.42 MHz), GSM/GPRS/UMTS (1800/1900/2100 MHz) and Bluetooth/Wi-Fi (2400 MHz) bandwidths in mobile phone application.
- The activity was carried out in the frame of a European Seventh Framework Programme (Adapting receivers to requirements and upgrading core technologies) project, HIMALAYA (HIgh performance MAss market GNSS receiver muLty stAndard readY for mArket).

Firmware for IBOB and BEE2 (CASPER) used in Space Debris observations with the "Northern Cross" Radiotelescope
- Development of the firmware for data acquisition, digital down conversion, time domain filtering and decimation, calibration to correct the phase of the different receiver chains, correlation of various baselines and beamforming.
- The backend architecture is designed to work with the existing receivers of both the E/W and N/S arm of the "Northern Cross" Radiotelescope. It consists of 4 parallel beamformers, combining 4 receivers each.
- The activity was carried out in the frame of the European Space Agency funded programme "Medicina Support Activities for Surveillance Validation and Operations" (Space Situational Awareness Preparatory Programme).

Software simulations of multi-beam for the "Northern Cross" Radiotelescope

- Simulations (Matlab) of multi-beam algorithm (FFT beamformer) in order to calculate how many independent beams it is possible to form simultaneously (within the FoV of the single sensor) for various array configurations both with N/S arm (varying the number of receivers per cylinder) and with the E/W arm (varying the number of receivers per sector) of the "Northern Cross" Radiotelescope.
- The activity was carried out in the frame of the European Space Agency funded programme "Medicina Northern Cross Upgrade Design" (Space Situational Awareness Preparatory Programme).

Firmware for ROACH-1 (CASPER) of a 4-inputs wideband FX correlator

- Full-stokes correlator for two dual pol. antennas (4-inputs) with 450 MHz of bandwidth, 1024 FFT channels and programmable integration time (1-10 sec.).

Period:	March 2007 - February 2010
Employer	Department of Astronomy, University of Bologna
Position held:	Temporary Research Fellow

Software simulations of beamforming algorithms

- Simulations (Matlab) of MVDR algorithm on BEST-1 (linear array of 4 antennas) and BEST-2 (planar array of 8x4 antennas), test beds of SKADS project, to study radio interference rejection capability, also in presence of moving RFIs.

Project and prototiping of the Front-End of BEST-3lo test bed (SKADS)

- Project, realization and characterization (S-param. measurements) of a bank composed of 8 analog switchable filters to be integrated in the Front-End board of BEST-3lo system (110-250 MHz).

Project of a RF system for the readout of signals of detectors matrices (MKID, Microwave Kinetic Inductance Detectors) for CMB (Cosmic Microwave Background)

- Collaboration with the University "La Sapienza" of Rome for the project and realization of a RF system of generation, modulation, demodulation and detection of the excitation signals of MKID detectors. This analogue system is able to measure the difference of amplitude and phase between the input and output signals of MKID sensors.

Firmware for IBOB and BEE2 (CASPER) used in BEST-3lo test bed (SKADS)

- Development of the firmware for data acquisition, digital down conversion, time domain filtering and decimation, calibration to correct the phase of the different receiver chains, correlation of various baselines and beamforming.
- BEST-3lo is a linear array composed of 16 log-periodic antennas (working in the range 110-250 MHz) installed in the focal line of the E/W arm of the "Northern Cross" Radiotelescope.

Period:	November 2006 – February 2007
Employer	ALSTOM Ferroviaria s.p.a. (Bologna)
Position held:	Safety Engineer (temporary position)

Verification & Validation (V&V) testing activities

- Functional testing of firmware for systems of railway signalling with the scope of verify the agreement with the requirements according to the safety regulations.
- Final reporting activities.

EDUCATION

Qualification awarded:	**M.Sc., Telecommunication Engineering**
Period:	October 2003 - October 2006
Institution	Faculty of Engineering, University of Bologna
Thesis Title:	"Analysis of adaptive beamforming algorithms applicable to Radio Astronomy and the implementation study of the KLT (Karhunen-Loève Transform) for antenna arrays", carried out at the Medicina Radioastronomical station
Grade:	110 out of 110 cum laude

Qualification awarded:	**B.Sc., Telecommunication Engineering**
Period:	October 2000 - July 2003
Institution	Faculty of Engineering, University of Bologna
Thesis Title:	"Characterization of wideband indoor propagation for WLAN coverage evaluation", carried out at the IEIIT-BO (CNR) Institute (Institute of Electronics and Information and Telecommunications

	Engineering) in Bologna.
Grade:	103 out of 110

Qualification awarded:	**High School Diploma**
Period:	September 1995 - June 2000
Institution	Liceo Scientifico “Rambaldi-Valeriani" (Imola)
Grade:	74 out of 100

PERSONAL SKILLS

Technical Skills

Hardware Programming:

- VHDL
- Xilinx Vivado, Modelsim
- Casper Toolflow (Matlab/Simulink, Xilinx System Generator)

Software Programming:

- C, C++, Python, Java.

Simulation Tool:

- Matlab (algorithm simulation)
- Simulink (dynamic systems modelling).

Measurement Instrumentation:

- Use of Oscilloscope, Spectrum Analyzer, Logic State Analyzer, Vector Network Analyzer, Signal generator.

RF/Microwave Circuit Design:

- Microwave office
- Experience in the realization and testing of RF/Microwave circuit prototypes (circuit layout, component mounting on PCB, measurements of S-parameters, etc…).

Languages

- Italian (Mother Tongue)
- English
- French

TRAINING COURSES

Software Programming

- C++, Unit VI of Scientific Direction ICT-INAF, 2015
- Python, CINECA Inter-University Consortium, 2011

System Engineering

- Methodologies and Instruments for the Project of Complex Systems for Astrophysics, Scientific Direction INAF - INCOSE Italia - ASTER, 2014

Hardware Programming

- VHDL, Mindway s.r.l., accredited Authorized Training Provider (ATP) for Xilinx, 2010

Simulation Tools

- Matlab, The Mathworks, 2010
- Simulink, The Mathworks, 2010

PUBLICATIONS

Refereed Journal Publications

- *Tavani, M.; Casentini, C.; Ursi, A.; Verrecchia, F.; Addis, A.; Antonelli, L. A.; Argan, A.; Barbiellini, G.; Baroncelli, L.; Bernardi, G.; Bianchi, G.; Bulgarelli, A.; Caraveo, P.; Cardillo, M.; Cattaneo, P. W.; Chen, A. W.; Costa, E.; Del Monte, E.; Di Cocco, G.; Di Persio, G.; Donnarumma, I.; Evangelista, Y.; Feroci, M.; Ferrari, A.; Fioretti, V.; Fuschino, F.; Galli, M.; Gianotti, F.; Giuliani, A.; Labanti, C.; Lazzarotto, F.; Lipari, P.; Longo, F.; Lucarelli, F.; Magro, A.; Marisaldi, M.; Mereghetti, S.; Morelli, E.; Morselli, A.;* ***Naldi, G.****; [+ 23 other coauthors],* “An X-ray burst from a magnetar enlightening the mechanism of fast radio bursts”*, Nature Astronomy, https://doi.org/10.1038/s41550-020-01276-x, (2021).*
- *Tavani, M.; Verrecchia, F.; Casentini, C.; Perri, M.; Ursi, A.; Pacciani, L.; Pittori, C.; Bulgarelli, A.; Piano, G.; Pilia, M.; Bernardi, G.; Addis, A.; Antonelli, L. A.; Argan, A.; Baroncelli, L.; Caraveo, P.; Cattaneo, P. W.; Chen, A.; Costa, E.; Di Persio, G. Donnarumma, I.; Evangelista, Y.; Feroci, M.; Ferrari, A.; Fioretti, V.; Lazzarotto, F.; Longo, F.; Morselli, A.; Paoletti, F.; Parmiggiani, N.; Trois, A.; Vercellone, S.;* ***Naldi, G.****; Pupillo,*

G.; Bianchi, G.; Puccetti, S.; "Gamma-Ray and X-Ray Observations of the Periodic-repeater FRB 180916 during Active Phases"*, The Astrophysical Journal, vol. 893, no. 2, 2020. doi:10.3847/2041-8213/ab86b1, (2020).*

- *Pilia, M.; Burgay, M.; Possenti, A.; Ridolfi, A.; Gajjar, V.; Corongiu, A.; Perrodin, D.; Bernardi, G.;* ***Naldi, G.****; [+ 30 other coauthors],* "The Lowest-frequency Fast Radio Bursts: Sardinia Radio Telescope Detection of the Periodic FRB 180916 at 328 MHz"*, The Astrophysical Journal, vol. 896, no. 2, 2020. doi:10.3847/2041-8213/ab96c0, (2020).*
- *A. Melis, R. Chiello, G. Comoretto, R. Concu, A. Magro,* ***G. Naldi****, A. Navarrini, A. Poddighe, G. Pupillo, F. Schillirò and K. Zarb Adami,* "A Digital Beamformer for the PHAROS2 Phased Array Feed"*, Journal of Astronomical Instrumentation, Vol. 09, No. 03, 2050013, doi:10.1142/S2251171720500130, (2020).*
- *Locatelli, N. T.; Bernardi, G.; Bianchi, G.; Chiello, R.; Magro, A.;* ***Naldi, G.****; Pilia, M.; Pupillo, G.; Ridolfi, A.; Setti, G.; Vazza, F.;* "The Northern Cross fast radio burst project - I. Overview and pilot observations at 408 MHz"*, Monthly Notices of the Royal Astronomical Society, vol. 494, no. 1, pp. 1229–1236, 2020. doi:10.1093/mnras/staa813, (2020).*
- *Cutajar, D.; Magro, A.; Borg, J.; Adami, K. Z.; Bianchi, G.; Pupillo, G.; Mattana, A.;* ***Naldi, G.****; Bortolotti, C.; Perini, F.; Lama, L.; Schiaffino, M.; Roma, M.; Maccaferri, A.; Lizia, P. Di; Massari, M.; Losacco, M.;* "PyBIRALES: A Radar Data Processing Backend for the Real-Time Detection of Space Debris"*, Journal of Astronomical Instrumentation, vol. 9, no. 1, 2020. doi:10.1142/S2251171720500038, (2020).*
- *M. Losacco, P. Di Lizia, M. Massari,* ***G. Naldi****, G. Pupillo, G. Bianchi, J. Siminski,* "Initial orbit determination with the multibeam radar sensor BIRALES"*, Acta Astronautica, vol. 167, pp. 374–390, 2020. doi:10.1016/j.actaastro.2019.10.043, (2020).*
- *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, March 2018, Volume 45, Issue 1, pp 1–20, DOI: 10.1007/s10686-017-9566-x, (2018).*
- *Comoretto, G., Chiello, R., Roberts, M., Halsall, R., Adami, K.Z., Alderighi, M., Aminaei, A., Baker, J., Belli, C., Chiarucci, S., D'angelo, S., Dalle Mura, G., Mattana, A., Monari, J.,* ***Naldi, G.****, Pastore, S., Perini, F., Poloni, M., Pupillo, G., Rusticelli, S., Schiaffino, M., Schillirò, F. & Zaccaro, E.,* "The Signal Processing Firmware for the Low Frequency Aperture Array"*, Journal of Astronomical Instrumentation, Vol. 06, Issue 01, doi: 10.1142/S2251171716410154, March 2017.*
- ***Naldi, G.****, Mattana, A., Pastore, S., Alderighi, M., Adami, K., Schilliro`, F., Aminaei, A., Baker, J., Belli, C., Chiarucci, S., Chiello, R., Comoretto, G., D'Angelo, S., Dalle Mura, G., De Marco, A., Halsall, R., Magro, A., Monari, J., Perini, F., Poloni, M., Pupillo, G., Roberts, M., Rusticelli, S., Schiaffino, M. & Zaccaro, E.,* "The Digital Signal Processing Platform for the Low Frequency Aperture Array: Preliminary Results on the Data Acquisition Unit"*, Journal of Astronomical Instrumentation, Vol. 06, Issue 01, doi: 10.1142/S2251171716410142, March 2017.*
- *P. Bolli, G. Pupillo, G. Virone, M. Z. Farooqui, A. Lingua, A. Mattana, J. Monari, M. Murgia,* ***G. Naldi*** *[+ 8 other coauthors],* "From MAD to SAD: The Italian experience for the low-frequency aperture array of SKA1-LOW"*, Radio Science, Vol. 51, doi:10.1002/2015RS005922, March 2016.*
- *G. Pupillo,* ***G. Naldi*** *[+ 20 other coauthors],* "Medicina array demonstrator: calibration and radiation pattern characterization using a UAV-mounted radio-frequency source"*, Experimental Astronomy, June 2015, Volume 39, Issue 2, pp 405-421, DOI 10.1007/s10686-015-9456-z.*

Books

- *Stelio Montebugnoli, Cristiano Cosmovici, Jader Monari, Salvatore Pluchino,* ***Giovanni Naldi****, [+ 9 other coauthors],* "The Next Steps in SETI-ITALIA Science and Technology"*, in Communication with Extraterrestrial Intelligence, pp. 95-108, edited by Douglas A. Vakoch, published by State University of New York Press, Albany, 2011 State University of New York, all rights riserved, printed in the United States of America.*

Conference Publications

- *G. Pupillo, A. Navarrini, A. Melis, R. Concu, P. Ortu, P. Marongiu,* ***G. Naldi****, S. Rusticelli, A. Saba, A. Scalambra, L. Schirru, A. Ladu, T. Pisanu, E. Urru,* "Preliminary Characterization of the Digitally Formed Beams of PHAROS2 Phased Array Feed," *2020 50th European*

Microwave Conference (EuMC), Utrecht, Netherlands, 2021, pp. 1035-1038, doi: 10.23919/EuMC48046.2021.9337938, (2021).

- *F. Schillirò, M. Alderighi, C. Belli, S. Chiarucci, R. Chiello, G. Comoretto, S. D'Angelo, A. Magro, A. Mattana, J. Monari,* ***G. Naldi****, S. Pastore, F. Perini, M. Poloni, S. Rusticelli, M. Schiaffino, K. Zarb Adami,* "Design and prototyping of the Italian Tile Processing Module (ITPM) 1.6 for the low-frequency aperture array deployment," *Proc. SPIE 11445, Ground-based and Airborne Telescopes VIII, 1144574, 13 December 2020, https://doi.org/10.1117/12.2562085, (2020).*
- *G. Comoretto, J. Monari, C. Belli, S. Chiarucci, F. Schillirò, M. Schiaffino, F. Perini, A. Mattana, M. Alderighi, S. D'Angelo, S. Pastore,* ***G. Naldi****, G. Pupillo, M. Poloni, S. Rusticelli, R. Chiello, K. Zarb Adami, A. Magro,* "The signal processing chain of the Low Frequency Aperture Array," *Proc. SPIE 11445, Ground-based and Airborne Telescopes VIII, 1144571, 13 December 2020, https://doi.org/10.1117/12.2561699, (2020).*
- *G. Bianchi, C. Bortolotti, M. Roma, G. Pupillo,* ***G. Naldi****, [+16 other coauthors],* "Exploration of an innovative ranging method for bi-static radar, applied in LEO Space Debris surveying and tracking"*, 71st International Astronautical Congress (IAC) – The CyberSpace Edition, 12-14 October, (2020).*
- *Pupillo, G.; Bianchi, G.; Mattana, A.;* ***Naldi, G****.; Bortolotti, C.; Roma, M.; Schiaffino, M.; Perini, F.; Lama, L.; Losacco, M.; Massari, M.; Di Lizia, P.; Magro, A.; Cutajar, D.; Borg, J.; Monaci,* "Operational Challenges of the Multi-Beam Radar Sensor BIRALES for Space Surveillance"*, First International Orbital Debris Conference, held 9-12 December, 2019 in Sugar Land, Texas. LPI Contribution No. 2109. Houston, TX: Lunar and Planetary Institute, (2019).*
- *M. Losacco, P. Di Lizia, M. Massari, G. Bianchi, G. Pupillo, A. Mattana,* ***G. Naldi****, C. Bortolotti, F. Perini, L. Lama, M. Schiaffino, M. Roma, A. Maccaferri, A. Magro, D. Cutajar, J. Borg, F. Monaci,* "Space surveillance with the multibeam radar sensor BIRALES"*, 70th International Astronautical Congress (IAC), Washington D.C., United States, 21-25 October, (2019).*
- *M. Losacco, M. Massari, P. Di Lizia, G. Bianchi, G. Pupillo, A. Mattana,* ***G. Naldi****, C. Bortolotti, M. Roma, M. Schiaffino, F. Perini, L. Lama, A. Magro, D. Cutajar, J. Borg, F. Monaci,* "Multibeam Radar Technology Applied to Space Surveillance in the LEO Regime"*, Italian Association of Aeronautics and Astronautics XXV International Congress 9-12 September 2019, Rome, Italy, (2019).*
- *M. Losacco, P. Di Lizia, M. Massari, G. Bianchi, G. Pupillo, A. Mattana,* ***G. Naldi****, [+10 other coauthors],* "The Multibeam Radar Sensor BIRALES: Performance Assessment for Space Surveillance and Tracking," *2019 IEEE Aerospace Conference, Big Sky, MT, USA, 2019, pp. 1-13, doi: 10.1109/AERO.2019.8741525, (2019).*
- *M. Losacco, P. Di Lizia, M. Massari, A. Mattana, F. Perini, M. Schiaffino, C. Bortolotti, M. Roma,* ***G. Naldi****, G. Pupillo, G. Bianchi, L. Lama, D. Cutajar, A. Magro, C. Portelli, M. Reali, W. Villadei,* "The Multibeam Radar Sensor BIRALES: Performance Assessment for Space Surveillance and Tracking"*, 69th International Astronautical Congress (IAC), Bremen, Germany, 1-5 October, (2018).*
- *D. Cutajar, A. Magro, J. Borg, K. Zarb Adami, G. Bianchi, C. Bortolotti, A. Cattani, F. Fiocchi, L. Lama, A. Maccaferri, A. Mattana, M. Morsiani,* ***G. Naldi****, F. Perini, G. Pupillo, M. Roma, S. Rusticelli, M. Schiaffino, P. Di Lizia, M. Losacco, M. Massari, M. Reali, and W. Villadei,* "A real-time space debris detection system for BIRALES"*, 69th International Astronautical Congress (IAC), Bremen, Germany, 1-5 October, (2018).*
- ***G. Naldi****, [+27 other coauthors],* "Development of a new digital signal processing platform for the Square Kilometre Array"*, 2nd URSI AT-RASC Proceedings, Gran Canaria, 28 May – 1 June, (2018).*
- *A. Navarrini, J. Monari, A. Scalambra, A. Melis, R. Concu,* ***G. Naldi****, [+29 other coauthors],* "Design of PHAROS2 Phased Array Feed"*, 2nd URSI AT-RASC Proceedings, Gran Canaria, 28 May–1 June, (2018).*
- *M. Losacco, P. Di Lizia, M. Massari, A. Mattana, F. Perini, M. Schiaffino, C. Bortolotti, M. Roma,* ***G. Naldi****, G. Pupillo, G. Bianchi, D. Cutajar, A. Magro, C. Portelli, M. Reali, W. Villadei,* "Orbit Determination of Resident Space Objects with the Multibeam Radar Sensor BIRALES"*, Proceedings of the 2018 Space Flight Mechanics Meeting, AIAA SciTech Forum, AIAA 2018-0729, DOI: 10.2514/6.2018-0729, (2018).*

- *M. Bartolini,* ***G. Naldi****, A. Mattana, A. Maccaferri, M. De Biaggi,* "FPGA applications for single dish activity at Medicina radio telescopes"*, Mem.S.A.It., 88, 172-178, BIBCODE: 2017MmSAI..88..172B, (2017)*
- ***G. Naldi****, [+14 other coauthors],* "Developments of FPGA-based digital back-ends for low frequency antenna arrays at Medicina radio telescopes"*, Mem.S.A.It., 88, 206-217, BIBCODE: 2017MmSAI..88..206N, (2017)*
- *G. Bianchi, C. Bortolotti, A. Cattani, F. Fiocchi, A. Maccaferri, A. Mattana, M. Morsiani,* ***G. Naldi****, [+15 other coauthors],* "A new approach to LEO Space Debris survey: the Italian multibeam bi-static radar BIRALES"*, Proceedings of the 1st IAA Conference on Space Situational Awareness (ICSSA), IAA-ICSSA-17-11-13/15, 1-18, (2017)*
- *P. Benthem, M. Gerbers, J.G. Bij de Vaate, S. Wijnholds, J. Bast, T. Booler, T. Colgate, B. Crosse, D. Emrich, P. Hall, B. Juswardy, D. Kerniey, F. Schlagenhaufer, M. Sokolowski, A. Sutinjo, D. Ung, R. Wayth, A. Williams, M. Alderighi, P. Bolli, G. Comoretto, A. Mattana, J. Monari,* ***G. Naldi****, [+20 other coauthors],* "The low frequency receivers for SKA 1-low: Design and verification"*, IEEE Proceedings of the 2017 XXXIInd General Assembly and Scientific Symposium of the International Union of Radio Science (URSI-GASS), DOI: 10.23919/URSIGASS.2017.8104992, (2017)*
- *A. Navarrini, A. Orfei, R. Nesti, G. Valente, S. Mariotti, P. Bolli, T. Pisanu, J. Roda, L. Cresci, P. Marongiu, A. Scalambra, D. Panella, A. Ladu, A. Cattani, L. Carbonaro, E. Urru, A. Cremonini, E. Carretti, P. Ortu, F. Fiocchi, A. Melis, R. Concu, A. Saba, F. Schillirò, G. Comoretto,* ***G. Naldi****, A. Maccaferri, J. Monari, M. Morsiani, F. Perini, and M. Poloni,* "Front-Ends and Phased Array Feeds for the Sardinia Radio Telescope"*, 32nd URSI GASS, Montreal, 19-26 August 2017.*
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