

## NAME AND CONTACT INFORMATION

Dr. Alessandro Navarrini

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## WORK EXPERIENCE

15/06/2015–Present

### First Technologist at INAF (job title: “Primo Tecnologo”)

**INAF (National Institute for Astrophysics)-Astronomical Observatory of Cagliari, Italy**

Coordinator of PON WP1 “W-band multibeam heterodyne receiver for the SRT Gregorian Focus” (2.85 M€ grant awarded by the Italian Ministry of Education and Scientific Research) and Director of Execution of the Contract.

National Coordinator of the INAF activities on the Phased Array Feed (PAF) Advanced Instrumentation Program (AIP) for the Square Kilometer Array (SKA).

PI of development of high-frequency cryogenic PAF for radio astronomy application.

Supervisor of the development of the new receivers and components for the Sardinia Radio Telescope (SRT) at INAF-OA Cagliari.

Co-PI of Radionet (Radio Astronomy in Europe) Horizon2020 Joint Research Activity AETHRA WP1 program (Advanced European Technologies for Heterodyne Receivers for Astronomy, funded by the EU).

Part of the Sardinia Radio Telescope operating team.

Support astronomer of radio astronomy observations with the SRT telescope.

15/06/2010–14/06/2015

### Head of IRAM Receiver Group

**IRAM (Institut de RadioAstronomie Millimétrique), Saint Martin d'Hères, France**

In charge of a team of ≈20 people, including engineers and technicians. Team management, activity reporting, technical and administrative leadership of the group.

Team organization and supervision of the design and construction of the low-noise millimeter/submillimeter wavelength receivers of the IRAM NOEMA interferometer: developed and installed the first quadri-band receiver prototype on NOEMA Ant. 7 (≈70-373 GHz covered in four receiver bands) and started the production of the receiver series for the other NOEMA antennas.

Supervision of the design and construction of the upgrades of the EMIR receiver for the IRAM 30-m Pico Veleta radiotelescope.

Proposal, design study and development of passive components of the 67-116 GHz ALMA Band 2+3 receiver cartridge (funded by ESO).

Co-PI of Radionet FP7 AETHER WP1 program (Advanced European Terahertz HeterodynE Receivers, funded by the EU) for the development of the passive and the active components of low-noise dual-polarization cryogenic modules based on MMIC amplifiers for a W-band focal plane array.

Supervision of coordination of ALMA Band 7 receiver cartridge production at IRAM.

02/05/2006–14/06/2010

### First Technologist at INAF (job title: “Primo Tecnologo”)

**INAF (National Institute for Astrophysics)-Astronomical Observatory of Cagliari, Italy**

Contribution to the development of the L-P band coaxial receiver for the Sardinia Radio Telescope.

Development of microwave and millimetre-wave components for the SRT.

Co-PI of Radionet FP7 Joint Research Activity AMSTAR+ WP1 program (Advanced Millimeter and Submillimeter Technology for Astronomical Research+, funded by the EU).

Lecturer of the "Radio Astronomy Laboratory" course, Physics Department, University of Cagliari, Italy.

10/03/2003–30/04/2006

### Postdoctoral Scholar at UC Berkeley

**Radio Astronomy Laboratory, University of California, Berkeley, United States**

Receiver developments for the CARMA (Combined Array for Research in Millimeter-Wave Astronomy) interferometer. Design of superconducting Double Side Band (DSB) SIS mixers with integrated low noise amplifiers (LNAs) and of orthomode transducers (OMTs) for the 1.3 mm band. Contribution to construction of the CARMA array.

15/03/2002–09/03/2003

### Postdoctoral Scholar at IRAM

**IRAM (Institut de RadioAstronomie Millimétrique), Saint Martin d'Hères, France**

Design of backshort-tuned Single Side Band (SSB) SIS mixers and receivers for the 2 mm band of the IRAM Plateau de Bure Interferometer (Band 2).

## EDUCATION AND TRAINING

15/04/1998–14/03/2002

### PhD in Electronics and Microelectronics

**Université Joseph Fourier, Grenoble, France.** Thesis work prepared at IRAM (Institut de RadioAstronomie Millimétrique), Receiver Group, Saint Martin d'Hères, France

PhD Dissertation: *Development of DSB and SSB Superconductor Insulator Superconductor (SIS) Mixers for Radio Astronomy in the frequency band 250-370 GHz* (supervisor: B. Lazareff).

13/04/1997–31/12/1997

### M.A. in Optical Technologies

**AILUN (Associazione Istituzione Libera Università Nuorese), Nuoro, Italy**

Thesis work prepared at the Optical Science Laboratory, University College London, UK. Dissertation title: *A lateral shearing interferometer for optical testing* (supervisor: D. Walker).

### M.A. in Physics

**University of Florence, Florence (Italy), Sep. 1996**

Thesis work prepared at the Arcetri Astrophysical Observatory, Florence, Italy. Dissertation title: *Dynamical evolution of stars and interstellar gas in young clusters* (supervisor: F. Palla).

## PERSONAL SKILLS

Languages Italian (mother tongue)

Other languages

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

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user  
Common European Framework of Reference for Languages

Communication skills

Good communication skills gained during my teaching at University of Cagliari (Italy), my role of head of Front-End Group at IRAM (France) and my current and past positions at INAF.

Job-related skills

Long-standing expertise in millimeter-wave engineering and superconducting device physics.

Electromagnetic analysis of various design concepts using computer modelling tools (CST Microwave Studio, HFSS, Microwave Office, ADS, Sonnet). Development of innovative devices from inception to production. Design and characterization of SIS mixers, orthomode transducers (OMTs), microstrip/coplanar waveguide/stripline filters, waveguide filters and couplers, antenna feed-horns, low noise amplifiers (LNAs), integrated receiver module based on SIS mixer and MMIC amplifier, integrated dual-polarization MMIC receiver modules based on “active OMT”. Design of cryogenic systems.

Technical and administrative leadership and project management. Organization and coordination of technical work within given timescales and budgets. Supervision of high performing team. Results-oriented with demonstrated success in general management. Execution of large contracts.

Over twenty years of experience in design, construction, testing and production of microwave and millimeter-wave cryogenic low-noise wideband receivers for radio astronomy. Development of cryogenic receivers with state-of-the-art performance for IRAM, CARMA, ALMA and the SRT telescopes.

#### Radio astronomy observations

Support astronomer for radio astronomy observations with the SRT telescope and data reduction. Supervisor on Duty (SD) and Observer in Antenna (OiA) during the SRT Early Science Program. Data reduction of PdB interferometric data.

#### Teaching at University of Cagliari, Italy

Lecturer of a 72-hour course of “Radio Astronomy Laboratory” to fifth-year Physics students at the University of Cagliari in the academic year 2007/2008. The course was organized in a theoretical section focusing on microwave circuits and radio telescope (antenna optics, receivers and backends) and on an experimental section covering the use of the main microwave laboratory instrumentation (Vector Network Analyzers, Spectrum Analyzer, Noise Figure Analyzers and Oscilloscopes).

#### Lecturing at International Summer Schools and Universities short courses

Lecturer on “Radio Astronomy Receivers and Instrumentation” at the following International Schools: “Summer School on Single-Dish Radio Astronomy”, Santa Margherita di Pula, 12-17 September 2011; “6<sup>th</sup> IRAM 30-m Summer School 2011”, Pradollano, Granada, Spain, 23-30 September 2011; “School on Technology in Radio Astronomy and Space Science”, Pula, Italy, 11-16 June 2012; “7<sup>th</sup> IRAM 30-m Summer School 2013”, Pradollano, Granada, Spain, 13-20 September 2013; “Radio Astronomy Front-Ends”, Escuela Politecnica Superior, Universidad Autonoma de Madrid, Madrid, Spain, 8 September 2014.

#### Attended management course

Team management “Module 1: Manage your team performance” 35 hours, from 07/10/2010 to 02/12/2010, held at CCI Groupe Formation, Grenoble, France.

#### Funded programs, committees and other activities

#### Research grants and raised funds

##### Projects funds at INAF-OA Cagliari, Italy:

- Co-P.I. in project funded by the Italian Space Agency (ASI) titled *Technological development at millimeter wavelengths for polarization space missions*. The project was aiming at developing a planar OrthoMode Transducer for millimeter wavelengths (approved grant of 68.5 k€, TAS-I proposal for ASI 2007 technological development projects)
- P.I. of project funded by the Sardinia Regional Government on the *Analysis, optimization and characterization of microwave planar devices based on High Temperature Superconductor (HTS) technology* (approved grant of 53.6 k€).
- Co-P.I. of project funded under the Joint Research Activity AMSTAR+ consortium (Advanced Mm and Sub-mm Technologies for Astronomical Research) by Radionet FP7 *Development of a 3 mm band waveguide OMT prototype unit* (approved grant of 17.4 k€). The 42-month project ended in June 2012.
- P.I. of project funded by INAF SKA “Astronomia Industriale 2017. *INAF participation to Phased Array Feed (PAF) Advanced Instrumentation Program (AIP) for SKA*. Total funds for the 2017-2019 three-year program: 225 k€.
- Co-P.I. of project funded under the Joint Research Activity AETHRA consortium (Advanced European Technologies for Heterodyne Receivers for Astronomy) by HORIZON2020. *Develop and build a W-band MMIC array demonstrator*. Approved grant of 30 k€. Three-year project started on

Jan. 1<sup>st</sup> 2017.

- Coordinator of PON (Programma Operativo Nazionale) WP1: *W-band multibeam heterodyne receiver for the SRT Gregorian Focus*. Approved WP1 grant of 2.85 M€ awarded by the Italian Ministry of Education and Scientific Research, June 25<sup>th</sup>, 2019: 32-month programme aiming at procuring the W-band instrument based on the specifications and on the advanced project study carried out at INAF.

#### **External projects funds of the IRAM Front-End group, France (period 2010-2015):**

- Co-P.I. of project funded under the AETHER (Advanced European Terahertz Heterodyne Receivers) consortium by Radionet FP7 for the *Development of 67-116 GHz extremely wide RF-Band heterodyne modules* at IRAM (approved grant for WP1 of 95 k€).
- Co-P.I. of project funded by ESO (European Southern Observatory) for "Studies on ALMA upgrade". Project title: *Study of ALMA Band 2 and ALMA Band 2+3 receiver cartridges* (68.1 k€ grant).
- External contract with Taiwanese research institute (ASIAA Sinica) for the production of two ALMA Band 7 receiver cartridges (undisclosed contract value).
- External contract for the development and delivery of a 2 mm/1.3 mm dual-band SIS receiver to the Max Planck Institute for Solar System Research (undisclosed contract value).
- External contract for manufacturing of 20 Sideband Separating ALMA Band 7 SIS Mixers for ESO as spare parts for the ALMA Band 7 cartridges (undisclosed contract value).
- External contract for the production of two 3 mm band (84-116 GHz) Sideband Separating SIS mixers including IF hybrid for Chalmers University of Technology, Onsala Space Observatory (undisclosed contract value).

#### **Committees**

##### **Participation to Committees:**

- Member of Radionet (Radio Astronomy in Europe) Horizon2020 evaluation Committees "Short Term Missions" and "Support of Technical Events".
- Member of Italian Square Kilometer Array (SKA) board.
- Member of Phased Array Feed Consortium board for the Square Kilometer Array (SKA).
- Member of four international PhD Thesis examining committees (two at the Université Pierre et Marie Curie, Paris, France, one at the Universidad Politécnica de Madrid, Spain, one at University of Oxford, UK).
- Member of selection committee of "Commissione di Concorso" for the selection of two candidates for permanent research positions with ASI - Italian Space Agency (Bando 11/2016).
- President of selection committee of "Commissione di Concorso" for the selection of one position of "CTER-Technician" with fixed-term contract with INAF-OA Cagliari (Determina n. 14 15/10/2015).
- Member of selection committee of "Commissione di Concorso" for the selection of one position of "Technologist" with fixed-term contract with INAF-OA Cagliari (Selezione 1 Tecnologo OACA2016-SST3).
- Member of selection committee of "Commissione di Concorso" for the selection of 26 "Technologists" for permanent research positions with INAF, Prot. 5022/18, Tit.: V Cl 1, (Selezione 26 Tecnologi Codice Concorso: Settore Tecnologico ST-3 Tecnico-Scientifico).
- President of selection committee of "Commissione di Concorso" for the selection of one position of "CTER-Technician" with fixed-term contract with INAF-OA Cagliari (Determina n. 307 03/12/2018).

#### **Other activities**

##### **Presentations, conference organization, publications and article reviewing, university supervision:**

- Presentations at National and International Conferences (including as "invited speaker") and at Research Organizations (over 100 presentations).
- Organizer of the International *Phased Array Feed Workshop PAF2016* (<http://paf2016.oa-cagliari.inaf.it/>) and of Riunione Nazionale di Elettromagnetismo *RINEM2018* (<http://sites.unica.it/rinem2018/>).
- Author of over 100 technical publications in international journals, technical memos or conference proceedings.
- Serving regularly as reviewer of technical articles for IEEE Trans. Micr. Theory and Tech., IEEE Trans. on Terahertz Science and Tech., IEEE Microwave and Wireless Component Letters,

Progress in Electromagnetic Research and PASA (Publication of the Astronomical Society of Australia), Journal of Instrumentation (JINST).

- Supervisor of two Master Thesis students at the Department of Electrical and Electronics Engineering of the Cagliari University (DIEE), Italy.

#### Visiting periods

- Three-month visit to the Australian Telescope National Facility (ATNF), Receiver Group, Sydney, Australia, starting from Oct. 2008. Helped in development of a C-Band cryogenic low noise amplifier (LNA) for the ATCA (Australian Telescope Compact Array), pag. 8 of [http://www.atnf.csiro.au/news/newsletter/apr09/ATNFnews\\_Apr09\\_lowres.pdf](http://www.atnf.csiro.au/news/newsletter/apr09/ATNFnews_Apr09_lowres.pdf)
- Three-week visit to the Australian Telescope National Facility (ATNF), Receiver Group, Sydney, Australia, starting from Nov. 8th 2017, to discuss technical collaboration on Phased Array Feed in the framework of the SKA Advanced Instrumentation Program on PAFs.

#### Publication list

The following list includes refereed publications and non-refereed technical memos:

- 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*, Accepted for publication in Proceedings of European Microwave Week 2020, to be held in Utrecht, The Netherlands, 13-18 Sep. 2020.
- F. Thome, E. Ture, A. Leuther, F. Schaefer, **A. Navarrini**, P. Serres, O. Ambacher *A Fully-Integrated W-Band I/Q-Down-Conversion MMIC for Use in Radio Astronomical Multi-Pixel Receiver*, 293-UY25, To be published in IEEE Proceedings of the IMS International Microwave Symposium, Los Angeles, CA, USA, 21-26 June 2020.
- T. Pisanu, S. Casu, P. Marongiu, **A. Navarrini**, G. Deiana, C. Migoni, *Misure di temperatura di rumore con diversi materiali, sulla copertura del Gregoriano di SRT*, INAF Internal Report n. 16, 2020-04-07T08:48:22Z, March 2020, Available at: <https://openaccess.inaf.it/handle/20.500.12386/23887>.
- **A. Navarrini**, L. Olmi, R. Nesti, P. Marongiu, P. Ortu, L. Cresci, A. Orlati, A. Scalambra, A. Orfei, *Design concept of W-band multibeam receiver for the SRT*, To be published in Proceedings of the ISSTT International Symposium of Space Terahertz Technology, Phoenix, AZ, USA, 8-11 March, 2020.
- F. Thome, E. Ture, R. Iannucci, A. Leuther, F. Schaefer, **A. Navarrini**, P. Serres, *Frequency Multiplier and Mixer MMICs Based on a Metamorphic HEMT Technology Including Schottky Diodes*, IEEE Access, Vol. 8, Issue 1, pp 12697-12712, ISSN: 2169-3536, DOI: 10.1109/ACCESS.2020.2965823.
- P. Ortu, A. Saba, P. Marongiu, F. Gaudiomonte, **A. Navarrini**, A. Cattani, A. Maccaferri, A. Scalambra, *Control Box PHAROS2*, INAF Technical Report n. 4, 2020-01-10T10:28:22Z, Available at: <https://openaccess.inaf.it/handle/20.500.12386/23053>.
- A. Scalambra and **A. Navarrini**, National Instrument Success Story *National Institute for Astrophysics Designs Innovative Phased Arrays for Radio Astronomy Applications* SS-M-INF 2019.11.11, Nov. 2019, Available at: <https://www.awr.com/serve/ss-m-inf>
- F. Buffa, R. Concu, G.L. Deiana, E. Egron, M.N. Iacolina, S. Loru, A. Maccaferri, A. Melis, M. Messerotti, S. Mulas, G. Murtas, **A. Navarrini**, A. Orfei, P. Ortu, T. Pisanu, A. Pellizzoni, S. Righini, A. Saba, G. Serra, C. Tiburzi, G. Valente, S. Viviano, A. Zanichelli, P. Zucca, *Testing Technological and Astronomical SDSA/SRT Capabilities for Solar and near-Sun Observations*, 70th International Astronautical Congress IAC 2019, 21-25 October 2019, Washington, D.C., USA.
- T. Pisanu, L. Schirru, E. Urru, **A. Navarrini**, *Design and simulations of a Phased Array Feed for the BIRALET Radar*, 70th International Astronautical Congress IAC 2019, 21-25 October 2019, Washington, D.C., USA.
- **A. Navarrini**, A. Scalambra, A. Melis, S. Rusticelli, R. Concu, P. Ortu, G. Naldi, G. Pupillo, A. Maccaferri, A. Cattani, A. Ladu, L. Schirru, F. Perini, M. Morsiani, J. Monari, J. Roda, P. Marongiu, A. Saba, M. Poloni, M. Schiaffino, A. Mattana, G. Bianchi, G. Comoretto, R. Nesti, E. Urru, T. Pisanu, F. Schillirò, K. Zarb Adami, A. Magro, R. Chiello, *The Warm Receiver Section and the Digital Backend of the PHAROS2 Phased Array Feed*, Accepted for publication in IEEE Int. Symposium on Phased Array Systems and Technology, Waltham, MA, USA, Oct. 15-18, 2019.
- **A. Navarrini**, A. Scalambra, S. Rusticelli, A. Maccaferri, A. Cattani, F. Perini, P. Ortu, Juri Roda, P. Marongiu, A. Saba, M. Poloni, A. Ladu, *A 2.3-8.2 GHz room temperature multi-channel receiver for Phased Array Feed application*, IEEE UKRON2019 Conference, Lviv, Ukraine, July 2-6, 2019. DOI: 10.1109/UKRCON.2019.8879848.
- **A. Navarrini**, R. Nesti, L. Schirru, *Electromagnetic simulation and beam-pattern optimization of a C-*



*band Phased Array Feed for SRT*, IEEE UKRON2019 Conference, Lviv, Ukraine, July 2-6, 2019. DOI: 10.1109/UKRCON.2019.8879888.

• L. Schirru, T. Pisanu, **A. Navarrini**, E. Urru, F. Gaudiomonte, P. Ortu, G. Montisci, *Advantages of using a C-band Phased Array Feed as a receiver in the Sardinia Radio Telescope for Space Debris monitoring*, IEEE UKRON2019 Conference, Lviv, Ukraine, July 2-6, 2019. DOI: 10.1109/UKRCON.2019.8879919.

• **A. Navarrini**, A. Scalambra, S. Rusticelli, A. Maccaferri, A. Cattani, F. Perini, P. Ortu, Juri Roda, P. Marongiu, A. Saba, M. Poloni, A. Ladu, L. Schirru, *The Room Temperature Multi-Channel Heterodyne Receiver Section of the PHAROS2 Phased Array Feed*, MDPI Electronics, 8(6), 666, 2019, doi:10.3390/electronics8060666.

• A. Orfei, A. Scalambra, P. Marongiu, M. Poloni, G. Comoretto, **A. Navarrini**, A. Orlati, E. Carretti, *Nuovo Sistema Ricevitori a SRT e loro integrazione ai Back-End*, INAF Internal Report, 15 May 2019.

• A. Pellizzoni, S. Righini, G. Murtas, F. Buffa, R. Concu, E. Egron, M. N. Iacolina, S. Loru, A. Maccaferri, A. Melis, **A. Navarrini**, A. Orfei, P. Ortu, T. Pisanu, A. Saba, G. Serra, G. Valente, A. Zanichelli, P. Zucca and M. Messerotti, *Imaging of the solar atmosphere in the centimetre-millimetre band through single-dish observations*, "Il Nuovo Cimento", 42 C, June 2019. DOI 10.1393/ncc/i2019-19009-x.

• S. Loru, A. Pellizzoni, E. Egron, S. Righini, M. N. Iacolina, S. Mulas, M. Cardillo, M. Marongiu, R. Ricci, M. Bachetti, M. Pilia, A. Trois, A. Ingallinera, R. Genova-Santos, O. Petruk, G. Murtas, G. Serra, F. Buffa, R. Concu, F. Gaudiomonte, A. Melis, **A. Navarrini**, D. Perrodin, G. Valente, *Investigating the high-frequency spectral features of SNRs Tycho, W44 and IC443 with the Sardinia Radio Telescope*, MNRAS, 01/2019, Volume 482, Issue 3, p.3857-3867, Bib.: 2019MNRAS.482.3857L.

• A. Scalambra, **A. Navarrini**, J. Roda, M. Poloni, F. Perini, A. Cattani, A. Maccaferri, S. Mariotti, P. Ortu, A. Saba, P. Marongiu, *PCB a 8 canali a singola conversione a rilezione d'immagine sintonizzabile. Primo prototipo*, INAF-IRA Internal Report n. 502-18, Nov. 30, 2018, available at <https://www.ira.inaf.it/Library/rapp-int/520-18.pdf>

• N. Antonietti, M. Burgay, R. Concu, G. Hellbourg, C. Maccone, A. Melis, S. Montebugnoli, P. Pari, D. Perrodin, **A. Navarrini**, F. Schillirò, S. Sadasivan, *Modeling Fast Radio Burst using the KLT*, Proceedings of 69th International Astronautical Congress 2018, Bremen, Germany, Oct. 1-5, 2018.

• A. Melis, R. Concu, D. Perrodin, A. Possenti, G. Aresu, M. Burgay, S. Casu, E. Egron, F. Loi, S. Loru, M. Murgia, A. Pellizzoni, M. Pilia, V. Vacca, C. Maccone, P. Pari, M. Lunesu, **A. Navarrini**, T. Pisanu, S. Montebugnoli, *INAF-UC Berkeley Collaboration for SETI*, Proceedings of 69th International Astronautical Congress 2018, Bremen, Germany, Oct. 1-5, 2018.

• **A. Navarrini**, G. Valente, P. Serres, F. Schaefer, F. Thome, O. Garnier, *Compact Dual-Polarization Cryogenic Receiver Module for the 75-116 GHz Band*, 2018 IEEE International Conference on Electromagnetics in Advanced Applications (ICEAA), Cartagena de Indias, Colombia, Sep. 10-14, 2018, pp 479-482.

• **A. Navarrini**, J. Monari, A. Scalambra, A. Melis, R. Concu, G. Naldi, A. Maccaferri, A. Cattani, P. Ortu, J. Roda, F. Perini, G. Comoretto, M. Morsiani, A. Ladu, S. Rusticelli, A. Mattana, P. Marongiu, A. Saba, M. Schiaffino, E. Carretti, F. Schillirò, E. Urru, G. Pupillo, M. Poloni, T. Pisanu, R. Nesti, G. Muntoni, K. Zarb Adami, A. Magro, R. Chiello, L. Liu, K. Grainge, M. Keith, M. Pantaleev, W. van Cappellen, *Design of Cryogenic Phased Array Feed for 4-8 GHz*, Proceedings of XXII Riunione Nazionale Elettromagnetismo –SIEM Academy (RINEM), ISBN 978-88-907599-2-5, Cagliari, Italy, Sep. 3-8, 2018, pp. 21-24. Available at <http://www.elettromagnetismo.it/wp-content/uploads/2018/09/XXII-RiNem-Conference-Proceedings.pdf>

• **A. Navarrini**, G. Valente, P. Serres, F. Schaefer, F. Thome, O. Garnier, *Design of Active Waveguide OMT for Radio Astronomy Receiver Array in the 3 mm Band*, Proceedings of XXII Riunione Nazionale Elettromagnetismo –SIEM Academy (RINEM), ISBN 978-88-907599-2-5, Cagliari, Italy, Sep. 3-8, 2018, pp. 389-392. Available at <http://www.elettromagnetismo.it/wp-content/uploads/2018/09/XXII-RiNem-Conference-Proceedings.pdf>

• A. Ladu, P. Ortu, A. Saba, M. Pili, T. Pisanu, A. Navarrini, *Sistema di controllo per la caratterizzazione dell'oscillatore locale ALMA impiegato nel ricevitore 100 GHz del Sardinia Radio Telescope*, INAF-Osservatorio Astronomico di Cagliari, Internal Report n. 73, 28/08/2018. Available at [http://www.oa-cagliari.inaf.it/area.php?page\\_id=10](http://www.oa-cagliari.inaf.it/area.php?page_id=10).

• A. Melis, J. E. Enriquez, D. Werthimer, G. Hellbourg, A. Siemion, N. Antonietti, S. Montebugnoli, C. Maccone, M. Pilia, D. Perrodin, M. Burgay, R. Concu, **A. Navarrini**, P. Pari, F. Schillirò, *INAF-UC Berkeley Collaboration on SETI Activities*, Procs. of 42nd COSPAR scientific assembly, July 14-22, 2018, Pasadena, California, USA.

• G. Pisano, C. Tucker, D. Mugnai, L. Olmi, P. Bolli, A. Orfei, F. D'Agostino, M. Miglioizzo, **A. Navarrini**, C. Riminesi *Metamaterial-based Toraldo pupils for super-resolution at millimetre wavelengths*, SPIE Astronomical Telescope & Instrumentation, Austin, Texas, USA, ISBN: 9781510619692, Volume

10708, id. 107080G 11 pp. (2018), June 10-15, 2018.

- **A. Navarrini**, J. Monari, A. Scalambra, A. Melis, R. Concu, G. Naldi, A. Maccaferri, A. Cattani, P. Ortu, J. Roda, F. Perini, G. Comoretto, M. Morsiani, A. Ladu, S. Rusticelli, A. Mattana, P. Marongiu, A. Saba, M. Schiaffino, E. Carretti, F. Schillirò, E. Urru, G. Pupillo, M. Poloni, T. Pisanu, R. Nesti, G. Muntoni, K. Zarb Adami, A. Magro, R. Chiello, L. Liu, K. Grainge, M. Keith, M. Pantaleev, W. van Cappellen, *Design of PHAROS2 Phased Array Feed*, Proceedings of 2nd URSI AT-RASC, Gran Canaria, 28 May – 1 June 2018.
- G. Naldi, G. Comoretto, R. Chiello, S. Pastore, G. Pupillo, A. Mattana, A. Melis, R. Concu, M. Alderighi, A. Aminaei, J. Baker, C. Belli, S. Chiarucci, S. D'Angelo, G. Dalle Mura, A. De Marco, R. Halsall, A. Magro, J. Monari, **A. Navarrini**, F. Perini, M. Poloni, M. Roberts, S. Rusticelli, M. Schiaffino, F. Schillirò, E. Zaccaro, K. Zarb Adami, *Development of a new digital signal processing platform for the Square Kilometer Array*, Proceedings of 2nd URSI AT-RASC, Gran Canaria, 28 May – 1 June 2018.
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