Curriculum vitae

PERSONAL INFORMATION

Georgios Kyriakou

WORK EXPERIENCE

January 2026 – ongoing

Postdoctoral Researcher (*Contrattista di Ricerca*)

UNIVERSITY OF ROME 'LA SAPIENZA', PHYSICS DEPARTMENT, ROME, ITALY

Testing, optimisation and commissioning for the optical configuration of the COSmic Monopole Observer (COSMO)

April 2024 – September 2025

Postdoctoral Research Fellow (*Assegnista di Ricerca*)

UNIVERSITY OF ROME 'LA SAPIENZA', PHYSICS DEPARTMENT, ROME, ITALY

Research on the modelling, design, and simulation of novel dichroic components for future dual-band receivers, based on metamaterial solutions with a focus on the metal-mesh technology

January 2024 – March 2024

Postdoctoral Research Fellow (*Assegnista di Ricerca*)

INAF-ARCETRI ASTROPHYSICAL OBSERVATORY, FLORENCE, ITALY

Research on novel methods of modelling of UAV-measurement low-frequency antenna arrays (SKA-Low) and indirectly-measured data extraction techniques.

June 2019 – October 2019

Computational Electromagnetics Internship

FIELDSCALE, THESSALONIKI, GREECE

R&D on experimentation and simulation of noise models using a SPICE environment and applying them in testing the EMC performance of capacitive touch sensors

Sector: Industrial Research and Technology

EDUCATION AND TRAINING

November 2020 – January 2024

Ph.D. (*"Dottore di Ricerca"*) in Physics and Astronomy

INAF-OSSERVATORIO ASTROFISICO DI ARCETRI, UNIVERSITÁ DEGLI STUDI DI FIRENZE, FLORENCE, ITALY

Thesis: "Assessment and optimization of electromagnetic performance of low-frequency antenna arrays (SKA) by means of numerical methods, funded by the INAF-OAA grant ("assegno di ricerca"): "*Numerical analysis and development of new algorithms for the electromagnetic characterization of SKA1-LOW*", Supervisors: Dr. Pietro Bolli & Asoc. Prof. Marco Romoli

Analysis of EM performance of the SKA-Low array element, improvement of its narrow-band spectral properties, as well as examination and proposed mitigation of array effects (ground plane diffraction, mutual coupling of antenna pairs)

CURTIN INSTITUTE OF RADIO ASTRONOMY, PERTH, WESTERN AUSTRALIA

University Associate (August - October 2023), collaboration on new methods of array S-parameter extraction from antenna pattern measurements

September 2013 – April 2020

Integrated Master ("*Diploma*") in Electrical and Computer Engineering, "*Excellent*" overall grade (9.06/10)

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING, ARISTOTLE UNIVERSITY OF THESSALONIKI, GREECE

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Core Curriculum (180 ECTS) & Specialization in Telecommunications (120 ECTS), Thesis: Analysis of a parabolic reflector antenna feed for radio astronomy applications: Treated the analysis of a candidate feed for a 3m radiotelescope aimed at observation of the HI spectral line using mode-matching methods, Supervisor: Prof. T. Yioultsis

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Electrical Engineering Masters - Exchange Program: University of Twente, February - July 2018 (15 ECTS)

Relevant Coursework: Electromagnetic Fields and Propagation, Microwave Engineering, Antenna Analysis and Design, Structured/Object-Oriented Programming, Algorithms, Digital Signal and Image Processing, Telecommunications Systems, Optical Telecommunications, Electrical Circuits, Electronics, Wireless Transceiver Electronics, Photonics, Radioastronomy

PROFESSIONAL SKILLS

Organization skills & teamwork

ORGANIZATION OF EVENTS
- Session Chair for “Front-end systems for radio astronomy: from design to measurement" at URSI AT-RASC 2024, May 2024, Gran Canaria, Spain

PARTICIPATION IN CONSORTIA
- Member of the Italian Low-frequency Square Kilometer Array (SKA-Low) Team (see ’Research Activities’), affiliated researcher with INAF until 30/9/2025
- Member of the Next Generation Croce del Nord (NG-Croce) consortium (PNRR project)

TECHNICAL ASSOCIATIONS
- IEEE Graduate Student Member (2021-2023)
- Referee service for 3 journals published by IEEE (TAP, OJAP, WCL)

Communication skills
- 1 work visit to institutes/universities to enhance collaborations
- Outreach talks & guided demonstrations/visits (in English and Italian)
- Mentoring & course tutoring for Bachelor students

Publication summary
- 5 published papers in peer reviewed journals (of which 3 as first author)
- 11 conference proceedings publications (of which 7 as first author)
- 1 journal paper under review
- Total citations: 54, h-index: 3 (as per Google Scholar)

Digital competences

SELF-ASSESSMENT				
Information Processing	Communication	Content creation	Safety	Problem solving
Proficient user	Independent user	Proficient user	Independent user	Independent user

Digital competences - Self-assessment grid

- LANGUAGES
  MATLAB: experience in writing own code, extensive use of optimization and RF toolboxes
  python: ample coding experience (e.g. scipy, matplotlib)
  C++ (project creation & class functionalities)
- SOFTWARE
  FEKO: proficient use of EM analysis tools & post-processing of results
  HFSS: intermediate-level experience in EM analysis
  COMSOL: ample experience on FEM tools

- SYSTEM: Windows, Linux
- TYPESETTING: LaTeX, HTML
- OTHER: OpenOffice, git, gnuradio

PERSONAL SKILLS

Mother tongue
Greek

Other languages

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C2	C2	C2

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	Michigan Proficiency Certificate				
Italian	C21	C2	C2	C2	C2
German	B1	B1	B1	B1	B1
	Goethe-Zertifikat B2				
Dutch	A1	A1	A1	A1	A1

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

ADDITIONAL INFORMATION

Research interests
- Antenna design for radio astronomical applications
- Computational Electromagnetic Methods (Method of Moments, Characteristic Modes)
- Receiving Phased Arrays of antennas
- Noise modelling in microwave networks
- Radiometric Experiments for the Detection of the global 21 cm Cosmic Dawn signal
- Quasi-optical components and mm-wave metasurface technology
- Fourier Transform Spectroscope (FTS) technology

International Schools Attendance
- Astrostatistics 2019 Summer School at University of Crete, Heraklion, Greece
- European Radio Interferometry 2022 School at Astron/JIVE, Dwingeloo, Netherlands
- 1st SKAO Open Science School at Institute of Astrophysics of Andalucia, Granada, Spain

Talks
- “SKA-Low antenna and array electromagnetic analysis: improving the spectral response at low-frequencies”, CIRA, Western Australia, Oct. 2023

Outreach
- guided visits at the Arcetri Astrophysical Observatory
- Participation at the Researcher’s Open Night (30/09/2022, Florence, Italy)
- Talks and mentoring activities for the “Astro" project of the BEAM student team

Awards
- URSI Young Scientist grant during ATRASC 2024

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Published papers

1. **G. Kyriakou**, Maria Kovaleva, Karl F. Warnick, David B. Davidson, Pietro Bolli, “Deriving Mutual Impedance Matrix of a Large Antenna Array from Embedded Element Patterns with Measurement Noise”, in *Transactions on Antennas and Propagation*, vol. 73, no. 1, pp. 216-224, Jan. 2025, doi: 10.1109/TAP.2024.3470311

2. **G. Kyriakou**, P. Bolli, M. Bercigli, “Spectral Smoothness of ground plane backed Log-Periodic Dipole Antennas for radioastronomical applications”, in *International Journal of Antennas and Propagation*, 2024(1), Feb. 2024, doi.org/10.1155/2024/1399941.

3. **G. Kyriakou**, P. Bolli, L. Mezzadrelli (2023), “Suppresion of log-periodic dipole antenna spurious radiation by lumped element loading for radioastronomical application", *Radio Science*, 58, e2023RS007758, doi.org/10.1029/2023RS007758

4. F. Paonessa, L. Ciorba, **G. Kyriakou**, P. Bolli and G. Virone, “UAV-Based Measurement of Sharp Spectral Resonances in Mutually Coupled SKA-Low Elements," in *IEEE Antennas and Wireless Propagation Letters*, vol. 22, no. 11, Nov. 2023, doi.org/10.1109/LAWP.2023.3290967

5. M. Spinelli, **G. Kyriakou**, G. Bernardi, P. Bolli, L. J. Greenhill, A. Fialkov and H. Garsden, “Antenna beam characterisation for the global 21cm experiment LEDA and its impact on signal model parameter reconstruction", in *Monthly Notices of the Royal Astronomical Society*, Volume 515, Issue 2, September 2022, Pages 1580–1597, doi.org/10.1093/mnras/stac1804

Conference Proceedings

1. **G. Kyriakou** and G. Pisano, “Dichroic Dual-Angle Refractor: Multi-Cell Huygens’ Metasurface-Based Circuit Approximation," in *2025 International Conference on Electromagnetics in Advanced Applications (ICEAA)*, Palermo, Italy, 2025, pp. 1019-1020, doi: 10.1109/ICEAA65662.2025.11305760

2. **G. Kyriakou**, G. Pisano, L. Olmi and F. Piacentini, “Design of a Dichroic Transmissive Huygens’ Metasurface Unit-Cell Presenting Refraction Angle Duality," in *19th European Conference on Antennas and Propagation (EuCAP)*, Stockholm, Sweden, 2025, pp 1-5, doi: 10.23919/EuCAP63536.2025.10999362

3. P. Bolli, L. Mezzadrelli, **G. Kyriakou** and F. Perini, “A Hybrid Cavity-Planar P-band Illuminator for Primary Focus Reflector Antenna," in *2024 International Conference on Electromagnetics in Advanced Applications (ICEAA)*, Lisbon, Portugal, 2024, pp. 263-268, doi: 10.1109/ICEAA61917.2024.10701922

4. L. Mezzadrelli, A. Sganzerla, P. Bolli, **G. Kyriakou** and F. Perini, “Antenna Mass Production for SKA-LOW," in *2024 IEEE International Symposium on Antennas and Propagation and INC/USNC-URSI Radio Science Meeting (AP-S/INC-USNC-URSI)*, Firenze, Italy, 2024, pp. 295-296, doi: 10.1109/AP-S/INC-USNC-URSI52054.2024.10686947

5. **G. Kyriakou**, M. Kovaleva and D. B. Davidson, "Impact of Antenna Load on Embedded Element Patterns in Aperture Arrays: the Single Fault Case," *2024 4th URSI Atlantic Radio Science Meeting (AT-RASC)*, Meloneras, Spain, 2024, pp. 1-4, doi: 10.46620/URSIATRASC24/FXSA6824

6. M. Kovaleva, **G. Kyriakou** and D. B. Davidson, "Mutual Impedance Matrix Extraction from Embedded Element Patterns of the Murchison Widefield Array," *2024 4th URSI Atlantic Radio Science Meeting (AT-RASC)*, Meloneras, Spain, 2024, pp. 1-4, doi: 10.46620/URSIATRASC24/KLRW4510

7. **G. Kyriakou** and P. Bolli, “Investigating Adverse Low-frequency Effects of Log-periodic Dipole Antenna Resonant Radiation," in *2023 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting (USNC-URSI)*, Portland, OR, USA, 2023, pp. 771-772, doi: 10.1109/USNC-URSI52151.2023.10237804

8. **G. Kyriakou**, P. Bolli and G. Virone, “Characteristic Modes Analysis of Mutually Coupled Log-Periodic Dipole Antennas," in *2023 17th European Conference on Antennas and Propagation (EuCAP)*, Florence, Italy, 2023, pp. 1-4, doi: 10.23919/EuCAP57121.2023.10133524

9. M. Spinelli, G. Bernardi, L. J. Greenhill, P. Bolli, **G. Kyriakou**, H. Garsden, A. Fialkov, “Chasing the Cosmic Dawn with LEDA experiment: latest improvements in data and systematics characterisation", in *3rd URSI Atlantic/Asia-Pacific Radio Science Meeting*, 2022, https://www.ursi.org/proceedings/procAT22/ATAPRASC2022-papers/WQKGBR56QV.pdf

10. **G. Kyriakou**, P. Bolli, R. Subrahmanyan and D. B. Davidson, “Experimental verification of anomalous spectral features of SKALA4.1 antenna", in *2021 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting (APS/URSI)*, 2021, pp. 47-48, doi:10.1109/APS/URSI47566.2021.9704375

Pre-prints

1. **G. Kyriakou**, “Non-uniform Antenna Loading Effect on Embedded Element Patterns and Application to Fault Detection”, submitted to *IEEE Transactions on Antennas and Propagation* (under review, arXiv:2601.15367)

2. L. McKay, R. Subrahmanyan, A. Chippendale, P.Bolli, **G. Kyriakou**, A. Dunning, R. Ekers, “Precise Measurement of the Absolute Sky Brightness at 60 to 350 MHz”, submitted to *Nature Astronomy* (under review, arXiv:2509.11846)

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Technical Reports and Other publications

1. **G. Kyriakou** and P. Bolli, “Effects of the Grid Mesh on the Isolated SKALA4.1 Antenna (SKAO-TEL-0002315)”, September 2023, Jodrell Bank Observatory (SKAO)
2. Macario, G., Baffa, C., Belli, C., Bolli, P., Chiarucci, S., Comoretto, G., Di Ninni, P., Giani, E., **Kyriakou, G.** (2022), “The INAF-Arcetri Astrophysical Observatory contribution to SKA-Low: technology and first observations", *Il Colle Di Galileo*, 11(2), 49–60. https://doi.org/10.36253/cdg-13839

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