

Walter Fuscaldo

Personal Information

First Name Walter
Last Name Fuscaldo

Working Activities

Jan. 2018 – Today **Postdoctoral Researcher**, *Department of Information Engineering, Electronics, and Telecommunications*, Sapienza University of Rome, Rome, Italy.
Mar. 2017 – Sep. 2017

Duration 18 months

Activities Graphene-based reconfigurable antennas, and frequency-domain/time-domain near-field focusing through leaky-wave radiating systems.

Jun. 2018 – Aug. 2018 **Visiting Scientist**, *NATO STO - Centre for Maritime Research and Experimentation (CMRE)*, La Spezia, Italy.
Sep. 2017 – Dec. 2017
Sep. 2014 – Dec. 2014

Duration 9 months

Activities Ship Detection/Tracking using multistatic Global Positioning Satellite (GPS) signals; Electromagnetic modeling of scattering problems for ship detection in maritime scenarios through Global Navigation Satellite System Reflectometry (GNSS-R) signals and through high-resolution radars.

Internships

May 2016 – Sep. 2016 **Intern/Ph.D. Student**, *University of Houston*, Houston (TX), USA

Duration 4 months

Supervisors Prof. David R. Jackson *University of Houston*, Prof. Alessandro Galli *Sapienza University of Rome*

Activities Analytical framework for the evaluation of different figures of merit (beamwidth, directivity, sidelobe level, and etc.) of leaky-wave antennas.

Jan. 2015 – Jul. 2015 **Intern/Ph.D. Student**, *IETR UMR CNRS 6164*, Rennes, France
Jan. 2014 – Mar. 2014

Duration 9 months

Supervisors Alessandro Galli *Sapienza University of Rome*, and Mauro Ettore *University of Rennes 1*

Activities Development of a theoretical framework for the analysis of nondiffracting waves generated through Bessel-beam launchers at millimeter waves.

Jan. 2013 – Jul. 2013	Intern/Thesis Student, IETR UMR CNRS 6164, Rennes, France
Duration	6 months
Supervisors	Prof. Alessandro Galli <i>Sapienza University of Rome</i> , and Prof. Ronan Sauleau <i>University of Rennes 1</i>
Description	Analytical study and pre-design of a 40 GHz Bessel beam launcher for near-field applications.
Mar. 2012 – May. 2012	Intern/Master Student,, ELT Elettronica S.p.A., Rome, Italy.
Sep. 2011 – Jan. 2012	
Duration	6 months
Supervisors	Antonio Manna and Fabrizio Trotta <i>ELT S.p.A.</i>
Description	Design of 1-D and 2-D arrays of Vivaldi antennas. Design of conformal arrays of dual-polarized quadruple ridged horn over the 6–18 GHz Band. Full-wave simulation, analysis of results, and documentation.

Education

Nov. 2013 – Feb. 2017	Ph. D. in Information and Communication Technology, Sapienza University of Rome (Italy) and University of Rennes 1 (France).
Duration	3.5 years. This is currently the standard duration in Italy. Since 2016 PhD students must defend their thesis within the fourth year.
Title	<i>Advanced Radiating Systems Based on Leaky Waves and Nondiffracting Waves</i>
Supervisors	Prof. Alessandro Galli <i>Sapienza University of Rome</i> and Dr. Mauro Ettorre <i>University of Rennes 1</i>
Examination Committee	Prof. Giuseppe Schettini, Prof. Alessandro Toscano <i>Roma Tre University</i> , Prof. IEEE Fellow Francisco Medina-Mena <i>University of Seville</i>
Grade	Ph.D. degree (<i>cum laude</i> and with the <i>Doctor Europaeus label</i>); international cotutelle agreement between Sapienza University of Rome and University of Rennes 1.
Description	Investigation of near-field focusing systems generating Bessel beams through leaky modes in the millimeter-wave frequency range. Theoretical analysis and design of near-field focusing systems generating limited-dispersive, limited-diffractive X-waves. Analysis and design of reconfigurable leaky-wave antennas based on graphene and nematic liquid crystals whose main beam can electronically be steered at fixed frequency.
Jan. 2011 – Jul. 2013	M. Sc. in Telecommunications Engineering, Sapienza University of Rome, Rome, Italy.
Duration	2 years
Grade	110/110 “summa cum laude”.
Title	Design of Advanced Radiating Systems based on Leaky Waves for the Generation of Bessel Beams

Supervisors	Prof. Alessandro Galli <i>Sapienza University of Rome</i> , and Prof. Ronan Sauleau <i>University of Rennes 1</i>
Description	Design of Bessel beam launcher using higher-order leaky-wave modes.
Sep. 2007 – Dec. 2010	B. Sc. in Communications Engineering , <i>Sapienza University of Rome</i> , Rome, Italy.
Duration	3 years
Title	Analytical Methods for Electromagnetic Radiation Problems
Grade	110/110.
Supervisor	Prof. Alessandro Galli <i>Sapienza University of Rome</i>
Description	Multipole Expansion and Spherical Harmonics Expansion in electromagnetic problems.
Sep. 2006 – Sep. 2007	B. Sc. in Mathematics , <i>Sapienza University of Rome</i> , Rome, Italy.
Duration	1 year
Description	I started my bachelor study at the faculty of Mathematics, where I regularly succeeded the first year. Afterwards, I preferred to enroll in the Engineering curricula where I restarted my student career from the beginning. I got the Bachelor's degree in Telecommunications Engineering within the regular three-years time frame, although I started one year later with respect to my peers.

Other Schools and Courses

Years 2014 – 2015	ESoA Schools (the whole list and certificates are provided in a separate file)
Description	I have attended two courses of the European School of Antennas. The ESoA school is the most important and biggest PhD school of Electromagnetic Engineering and Antennas in the world.
Years 2014 – 2015	Academic Courses (as above)
Description	I have attended 5 M. Sc. courses from the department of Mathematics, Physics and Engineering at Sapienza University of Rome.
Years 2012 – 2016	Academic Online Courses (as above)
Description	I have attended 9 online courses offered by several prestigious universities through the web platform Coursera.

Awards

Jun. 2019 **Young Scientist Award in CEM, EMC, Scattering & EM Theory**

W. Fuscaldo, D. R. Jackson, and A. Galli “New Beamwidth Formulas for 1-D Leaky-wave Antennas: A Review”, *PIERS*, Rome, Italy, 17-20 June 2019.

Description The prize is given to the best work presented at the *41st Photonics & Electromagnetics Research Symposium*. The applicant must have a PhD degree in science/engineering and under 40 years of age by the conference date. The applicant must be listed as the first author as well as the presenting author of a paper submitted for oral presentation. The committee evaluates the quality of the work as well as the CV of the applicant. In that occasion the was composed by: Prof. Qing Huo Liu *Duke University*, Prof. Yury Shestopalov, *University of Gavle*, Prof. Eng Leong Tan *Nanyang Technological University*.

Sep. 2018 **Publons Peer Review Award 2018**

Description The prize is assigned to those who ranked in the top 1% reviewers in *Engineering* on Publons' global reviewer database, determined by the number of peer review reports performed during the 2017-2018 Award year.

Sep. 2018 **Best Paper Award in Applied Electromagnetics (Barzilai Prize)**

D. Comite and W. Fuscaldo, “Focusing Through Cylindrical Leaky Waves”, *XXII RiNEm*, Cagliari, Italy, 03-06 September 2018.

Description The prize is given to the best work presented at the *Riunione Nazionale di Elettromagnetismo*. All authors must be younger than 35 years old at the time of the presentation. The committee is composed by three national experts (in that occasion the committee was composed by: Prof. Sandra Costanzo, *University of Reggio Calabria*, Prof. Antonio Iodice, and Prof. IEEE Life Fellow Ovidio Maria Bucci *University of Naples, Federico II*). The committee evaluate the quality of the oral presentation (I was the presenter) and the originality of the work.

Apr. 2018 **Best Paper Award in Electromagnetics and Antenna Theory**

W. Fuscaldo et al., “Efficient 2-D Leaky-Wave Antenna Configurations Based on Graphene Metasurfaces”, *12th European Conference on Antennas and Propagation (EuCAP18)* London, UK, 9-13 April 2018.

Description The prize is given to the best work presented at the *European Conference on Antennas and Propagation*. The eligible works must prepare a poster in addition to the oral presentation. The originality of the work, the quality of the oral presentation, and interaction at the poster session are evaluated by a committee of recognized international experts (in that occasion the committee was composed by: Prof. IEEE Fellow Andrea Neto, *Technical University of Delft* Prof. IEEE Fellow Richard W. Ziolkowski *University of Arizona*, and Prof. IEEE Fellow Juan Mosig, *École Polytechnique Fédérale de Lausanne*).

Jan. 2018 **IEEE AP-S Student Award, Chapter Center-Southern Italy**

W. Fuscaldo, "Advanced Radiating Systems Based on Leaky Waves and Nondiffracting Waves ", *PhD Thesis*, 27 February 2017.

Description The prize is given to the best research document (original article, thesis, etc.) produced in the year 2017. The works are evaluated by a committee of recognized national experts (in that occasion the committee was composed by: Prof. Alessandra Costanzo *University of Bologna Alma Mater*, Prof. IEEE Fellow Maurizio Bozzi *University of Pavia*, Prof. Paola Pirinoli *Politecnico di Torino*).

Oct. 2016 **Young Engineer Prize**

W. Fuscaldo, P. Burghignoli, P. Baccarelli, A. Galli, "Efficient 2-D Leaky-Wave Antenna Configurations Based on Graphene Metasurfaces", *46th European Microwave Conference (EuMC16)* London, UK, 3-7 October 2016.

Description The prize is given to the best paper presented by young researcher (under 30) at the European Microwave Conference. The Young Engineer Prize is the most prestigious award for a young reseacher working in the field of microwaves. The European Microwave Week is the biggest european event (about 4000 attendees, and 1500 delegates) in the context of microwaves

Dec. 2015 **Yarman-Carlin Student Award (2nd prize)**

W. Fuscaldo, P. Burghignoli, P. Baccarelli, A. Galli, "Graphene-based Reconfigurable Leaky-Wave Antennas for THz Applications", *2015 IEEE 15th Mediterranean Microwave Symposium (MMS15)*, pp.282-285, Lecce, Italy, 2015.

Description The prize is given to the best paper presented by students (under 35 years old) participating at the IEEE Mediterranean Microwave Symposium. The committee is composed by four international experts (in that occasion the committee was composed by: Prof. Salvatore Caorsi, *University of Pavia*, Prof. Mohamed Essaaidi, *Abdelmalek Essaadi University*, Prof. IEEE Fellow Levent Gürel *Bilkent University*, and Prof. IEEE Fellow Siddik Yarman, *Istanbul University*). The committe evaluate the quality of the oral presentation and the originality of the work.

Projects and Grants

ONR Projects

Title			
Ship Detection/Tracking Using Multistatic GPS Signals			
Years	ID Number	Budget	Role
2017	N00014-16-13157	35 k€	Collaborator

Leonardo S.p.A. Projects

Title			
Study of a Radiating System for Software-Defined Radar Applications			
Years	ID Number	Budget	Role
2017	COLB-CTR-2017-009-A	15 k€	Collaborator

Title			
Wireless Power Transfer for Wearable and Implantable Devices			
Years	Funder	Budget	Role
2019–2021	MIUR	800 k€	Collaborator

Italian Projects

Title			
Efficient Radiating Systems for High-Frequency Wireless Power Transfer			
Years	Funder	Budget	Role
2019	Sapienza University of Rome	15 k€	Collaborator

Title			
Advanced Leaky-Wave Radiators for 5G Wireless Communications			
Years	Funder	Budget	Role
2018	Sapienza University of Rome	15 k€	Collaborator

Title			
Focusing Electromagnetic Fields with Leaky Waves for ICT Applications			
Years	Funder	Budget	Role
2017	Sapienza University of Rome	15 k€	Collaborator

Italian Grants

Title			
Technical Support to the Faculty of Information Engineering			
Years	Funder	Budget	Role
2017 – 2018	Sapienza University of Rome	5 k€	Collaborator

French Mobility Grants

(each proposal is evaluated by a committee of experts in the field)

Title			
Exact Analytical Formulas for Leaky-Wave Antennas			
Years	Funder	Budget	Role
2016	École Doctorale Matisse (City of Rennes)	800 €	PhD Student

Title			
Bessel beams and X-Wave modes at millimeter wavess			
Years	Funder	Budget	Role
2015	École Doctorale Matisse (City of Rennes)	1.6 k€	PhD Student

European Mobility Grants

(each proposal is evaluated by a committee of experts in the field)

Title			
Focus Wave Modes Through a Bessel-Beam Launcher at mm-Waves			
Years	Funder	Budget	Role
2015	European Science Foundation (Newfocus)	6.4 k€	PhD Student

Title			
Near-Field Focusing at mm-Waves by means of High-Order Leaky Modes			
Years	Funder	Budget	Role
2014	European Science Foundation (Newfocus)	3.2 k€	PhD Student

Mobility

Period	Place	Institution	Role
Jun. 2018 – Aug. 2018	La Spezia, Italy	NATO-STO CMRE	Visiting Scientist
Sep. 2017 – Dec. 2017	—	—	—
Sep. 2014 – Dec. 2014	—	—	—
May 2016 – Sep. 2016	Houston, TX, USA	University of Houston	PhD Student
Dec. 2017 – Jun. 2018	Rome, Italy	Sapienza University	Research Fellow
Sep. 2016 – Sep. 2017	—	—	—
Jul. 2015 – May 2016	—	—	PhD Student
Dec. 2015 – Jan. 2015	—	—	—
Mar. 2014 – Sep. 2014	—	—	—
Jun. 2013 – Jan. 2014	—	—	—
Jan. 2015 – Jul. 2015	Rennes, France	Université de Rennes 1	PhD Student
Jan. 2014 – Mar. 2014	—	—	—
Jan. 2013 – Jun. 2013	—	—	Master Student

Educational Activities

Mar.–May 2019 **Courses**

- Title Laboratory of Microwave and Antenna Engineering, held by Prof. P. Baccarelli
- Institution Roma Tre University, Department of Engineering (B. Sc. in Electronic Engineering).
- Description Transmission lines; scattering of plane waves; guided waves and resonators; two-port networks and their matrix representations; periodic structures; computational electromagnetics.

Apr. 2017 **Lectures**

- Title Electromagnetic Properties of Graphene; Graphene Leaky-Wave Antennas
- Institution Sapienza University of Rome, 26–29 April, 2017, European School of Antennas (ESoA)
- Course Leaky Waves and Periodic Structures for Antenna Applications organized by Prof. F. Frezza (15 attendees)
- Description The ESoA school is the most important and biggest PhD school of Electromagnetic Engineering and Antennas in the world.

Mar. 2017 **Workshops**

- Title Perspectives of Tunable Leaky-Wave Antennas based on Graphene in the THz range
- Institution European Conference on Antennas and Propagation (EuCAP 2017) in Paris, France, 19–24 March, 2017
- Course Workshop SWS03: Nanotechnology Applications of Antennas and Wireless Sensing, organized by P. Savi, *Politecnico di Torino* and K. Naishadham *Georgia Institute of Technology*, (20 attendees)
- Description EuCAP is one of the most important conference (about 1300 participants) in the context of antennas and propagation.

May. 2014 – Today **Seminar Activity**

- Description I have given several talks in different prestigious universities
- May 2018, Roma Tre University (invited talk for the M. Sc. course held by Prof. P. Baccarelli, 10 attendees)
 - Apr. 2014 – Today, University of Rome Sapienza (invited talks for the M. Sc. courses held by Prof. P. Burghignoli and Prof. A. Galli, 15 attendees)
 - Aug. 2016, University of New Orleans (invited talk for the PhD program supervised by Prof. Leszek Malkinski, 15 attendees)
 - Sep. 2016, University of Houston (invited talk for the M. Sc. course held by Prof. IEEE Fellow David R. Jackson, 30 attendees)

Mar. 2016 – Today **Supervisor Activity**

Description I have co-supervised 6 students (4 M. Sc., 2 B. Sc.)

- 2018 Daniele Palombi, M. Sc. Student, Bessel-Gauss beams through cylindrical leaky waves, supervised by Prof. P. Burghignoli
- 2017 Matteo Colantonio, B. Sc. Student, Analysis of terahertz feeders for Fabry-Perot cavity leaky-wave antennas, supervised by Prof. A. Galli
- 2017 Paolo De Santis, M. Sc. Student, Study of TE-TM waves launchers in azimuthally-symmetric planar structures, supervised by Prof. P. Burghignoli
- 2017 Alessandro Boesso, M. Sc. Student, Leaky-wave planar structures for the generation of nondiffracting beams, supervised by Prof. P. Burghignoli
- 2017 Andrea Giraldi, M. Sc. Student, Study of graphene-based radiating devices for terahertz applications, supervised by Prof. A. Galli
- 2016 Francesca Moratti, B. Sc. Student, Electromagnetic analysis of homogenized metasurfaces, supervised by Prof. IEEE Life Fellow P. Lampariello

Nov. 2013 – Today **Exam Evaluation Activity**

Description I have contributed to the evaluation of different undergraduate students of Telecommunications and Electronics Engineering doing the final exam of Electromagnetics Fields held by *Prof. Alessandro Galli* and *Prof. Paolo Lampariello*, respectively, at University of Rome Sapienza.

Scientific Activities

Oct. 2018 – Today **Organizer Activity**

Description I am organizing the Special Session *Localized Waves: Science and Applications* at the 41st Photonics & Electromagnetics Research Symposium (PIERS19), Rome, Italy, 17–20 June 2019.

Apr. 2018 – Today **Chairman Activity**

Description I served as a Chairman of the session *Antennas for Future Applications* at the 12th European Conference on Antennas and Propagation (EuCAP18), London, UK, 9–13 April 2018.

Apr. 2019 – Today **Editor Activity**

Description I serve as Associate Editor for the following journals:

- IET Microwaves, Antennas, and Propagation

Dec. 2014 – Today **Author Activity** (the whole publications list is provided in a separate file.)

- Overview
- Bibliometric data (Google Scholar)
 - h-index: 9
 - i10-index: 8
 - citations: 183
 - 73 peer-reviewed documents (2 invited book chapters, 21 published journal papers, 3 journal papers under review, 36 international conference papers, 1 international conference paper under review, 10 national conference papers)
 - First author of 15/20 journal papers
 - First author of 24/37 conference papers
 - Authored 9/21 journal papers on IEEE Trans. Antennas and Propagation and 4/21 on American Institute of Physics (AIP) and American Physical Society (APS) journals

Jun. 2014 – Today **Reviewer Activity**

- Overview More than 100 reviews for peer-reviewed international journals and conferences (more than 30 per year in the last 3 years)
- Description I frequently serve as a Reviewer (see publons.com/a/1277806) for the following journals:
- *IEEE Transactions Antennas and Propagation*
 - *IEEE Transactions on Nanotechnology*
 - *IEEE Antennas and Wireless Propagation Letters*
 - *IEEE Access*
 - *NATURE Scientific Reports*
 - *OSA Journal of the Optical Society of America A*
 - *OSA Journal of the Optical Society of America B*
 - *IOP Journal of Physics D: Applied Physics*
 - *IOP Journal of Optics*
 - *IOP Material Research Express*
 - *SPRINGER Nanoscale Research Letters*
 - *AIP Journal of Applied Physics*
 - *AIP Applied Physics Letters*
 - *AIP Physics of Plasmas*
 - *AIP Advances*
 - *IET Microwaves, Antennas and Propagation*
 - *IET Electronics Letters*
 - *TAYLOR & FRANCIS Waves in Random and Complex Media*
 - *MDPI Electronics*
 - *CAMBRIDGE International Journal of Microwave and Wireless Technology*
 - *HINDAWI International Journal of Antennas and Propagation*

References

Prof. Alessandro Galli, Sapienza University of Rome, Department of Information Engineering, Electronics and Telecommunications, Rome, Italy

Prof. David R. Jackson, University of Houston, Department of Electrical and Computer Engineering, Houston, TX, USA

Prof. Francisco Medina-Mena, University of Seville, Department of Electronics and Electromagnetism, Seville, Spain

Languages

Italian	Mother tongue
English	Fluent
French	Good
Spanish	Common usage
Portuguese	Common usage

Computer skills

Operating Systems	Windows, Linux (basic)
Programming Languages	C, Java, Python, FORTRAN (basic)
EM CAD Tools	Ansoft HFSS, CST Microwave, FEKO, COMSOL Multiphysics
Circuit CAD Tools	PSpice/OrCAD
Computational softwares	MATLAB, Mathematica
Markup Languages	LaTeX, HTML
Web development and database	PHP, MySQL

Driving Licenses

Italian Driving License - Category B Vehicle

Interests

Science	Mathematics, Physics and Biology
Arts	Literature, Cinema and Music
Sport	Football, Running and Chess