

FRANCESCO AMATO – CURRICULUM VITAE

PERSONAL DETAILS

Francesco Amato
Address Piazza Francesco Carrara, 15
56126 Pisa (PI), Italy
Nationality Italian
Phone +39 333 33 33 913
E-mail francesco.amato@cnit.it
Web page <http://www.francesco-amato.com>



ACADEMIC TITLES

6 May 2017 Ph.D in Electrical and Computer Engineering
Georgia Institute of Technology. Atlanta, GA
Thesis Title “Achieving hundreds-meter ranges in low powered RFID systems
with quantum tunneling tags”
Advisor Prof. Gregory D. Durgin

26 February 2009 Master in Telecommunication Engineering
Università degli Studi di Roma Tor Vergata. Roma, Italy
Thesis Title “Experimental setup for RFID radio sensors”
Advisor Prof. Gaetano Marrocco
Final Score 110 *cum laude*

10 November 2006 Bachelor in Telecommunication Engineering
Università degli Studi di Roma Tor Vergata. Roma, Italy
Thesis Title “Processing of high resolution polarimetric SAR data”
Advisor Prof. Domenico Solimini
Final Score 110 *cum laude*

March 2015 Teaching certificate “Tech to Teaching”
*Center for the Enhancement of Teaching and Learning,
Georgia Institute of Technology. Atlanta, GA*

PROFESSIONAL ACTIVITIES

July 2017 - Present **Post-doctoral Researcher**
CNIT National Laboratory of Photonic Networks, Pisa, Italy

August 2012 – December 2016 **Graduate Research Assistant**
*School of Electrical and Computer Engineering,
Georgia Institute of Technology. Atlanta, GA*

Developed a computer software and GUI interface (in MATLAB) to assist in the design of an open highway tolling system using purely passive 915 MHz RFID tags (designed with HFSS and tested on a VNA) affixed to the windshield of each vehicle.
Project funded by Intel Corp., Hillsboro, OR.

Designed (with Eagle CAD) and assembled a compact, portable, frequency hopping 5.8 GHz RFID reader compliant with FCC regulations. The reader mounted an MSP430 microcontroller programmed in C. *Project funded by National Cash Register Corp. – NCR, Norcross, GA.*

Designed (with ADS CAD) and tested (on VNA and Spectrum Analyser) a high gain, low powered, reflection amplifier with tunnel diode for long range semi-passive RFID tags.

May – August 2015 **Researcher**
Intel Labs. Santa Clara, CA

Experimental analysis (in MATLAB) for a Human Body communication channel

October 2009 – November 2011 **Ground System Engineer**
SES satellite. Château de Betzdorf, Luxembourg

Developed a reflector feed array receiver to miniaturize parabolic dishes for direct to home communications while improving the signal reception. Signal reception was improved by combining both antenna design and signal processing techniques.
Project funded by the European Space Agency - ESA

Design of ground stations for satellite communications
Procurement and project management to deploy ground stations in Vietnam

May – August 2009 **Intern**
Codin S.p.a, Roma, Italy

Design of Data Base Management Systems (with MySQL and Oracle)
Use of client based technologies: Javascript, HTML, XML, CSS
Use of server based technologies: PHP, Apache
Training on Java, C, C++ and Python

FELLOWSHIPS, HONORS AND AWARDS

2012 Fulbright Fellowship (30.000 \$)
USA Gov. – Bureau of Educational and Cultural Affairs

2013 - 2014 GoStem Fellowship (12.000 \$)
Georgia Institute of Technology. Atlanta, GA

2009 Master Thesis award “Sebastiano and Rita Raeli” (5.000 €)
Università degli Studi di Roma Tor Vergata. Roma, Italy

2015 William C. Brown Fellowship (3.000\$)
Georgia Institute of Technology. Atlanta, GA

2015 Research travel award (1.500\$)
Career, Research, Innovation, Development Conference
Georgia Institute of Technology. Atlanta, GA

2015 Best Student Paper Award ([link](#))
IEEE International Conference on RFID-Technologies and applications (RFID-TA). Tokyo, Japan

2017 Marie Skłodowska-Curie Seal of Excellence “High-quality project proposal in a highly competitive evaluation process” for the project proposal titled: “IoT Backscattering Sensors for Precision Agriculture Applications”

2014 Innovation Competition, finalist
Georgia Tech Research and Innovation Conference (GTRIC)
Georgia Institute of Technology. Atlanta, GA

TEACHING APPOINTMENTS

January– August 2016 **Instructor of Record**
School of Electrical and Computer Engineering,
Georgia Institute of Technology. Atlanta, GA
Course: Circuits and Electronics, ECE 3710 (students' evaluations:
[link](#))

August – December 2015 **Teaching Assistant**
School of Electrical and Computer Engineering,
Georgia Institute of Technology. Atlanta, GA
Course: Antenna Engineering, ECE 4730
Prepared and taught 15% of the course material (example of lesson
plan, [link](#))

Academic year 2013 – 2015 **Research advisor**
School of Electrical and Computer Engineering,
Georgia Institute of Technology. Atlanta, GA
Research project: “Wireless power energy harvesting through 3D
printed microwave circuits”

January - May 2013 **Teaching Assistant**
School of Electrical and Computer Engineering,
Georgia Institute of Technology. Atlanta, GA
Course: Electromagnetics, ECE 3025
Preparation of teaching material for “flipped classrooms”

LAB EQUIPMENTS AND PROGRAMMING

Hardware and Lab equipment	Vector Network Analyzer; Spectrum Analyzer; Signal Generator; Waveform generator; Power meter; Oscilloscope; Microcontrollers (Es. MSP430)
Client and Server based technologies	Javascript; HTML; XML; CSS; PHP; Apache; MySQL; Oracle C; C++; Python; MATLAB
CAD software	Eagle; ADS; HFSS; CST; Autocad
Protocols and communication methods	Protocols for the ISO/OSI standard (E.g.: TCP/IP); medium access methods (E.g.: CMA/CD); EPC Gen2

LANGUAGES

Italian	Fluent
English	Fluent
French	Pre-advanced (C1)
German	Intermediate (B1)

ORGANIZATION of INTERNATIONAL CONFERENCES

Publicity Chair
2018 IEEE International Conference on RFID. Orlando, FL ([link](#))

2017 IEEE International Conference on RFID. Phoenix, AZ ([link](#))

Volunteer Chair
2013 IEEE Globecom. Atlanta, GA ([link](#))

MEMBERSHIP in PROFESSIONAL SOCIETIES

2017 – present	Administrative Committee, <i>IEEE Council on RFID (CRFID)</i>
2009 – present	<i>Institute of Electrical and Electronics Engineers (IEEE)</i>
2009 – present	Engineer association of Rome (Italy)

2006 - 2009 Board of European Students of Technology (*BEST*)

PUBLICATIONS

Total citations: 94; h-index: 4;

Ph.D Dissertation **Amato F.**, *Achieving hundreds-meter ranges in low powered RFID systems with quantum tunneling tags*.
School of Electrical and Computer Engineering
Georgia Institute of Technology. Atlanta, Ga
Link: <https://smartech.gatech.edu/handle/1853/58228>

On International journals (under review) **Amato F.**, Torun. H. M. and Durgin D. G., “*RFID Backscattering in Wide Range Scenarios*”; IEEE Transactions on Wireless Communications. (*under review*)

Amato F., Peterson C. W., Degnan B. P., and Durgin G. D., “*Tunneling RFID Tags for Long-Range and Low-Power Microwave Applications*”, IEEE Transactions on Microwave Theory and Techniques. (*under review*)

In International Conferences **Amato F.**, Torun. H. M. and Durgin D. G., “*Beyond the Limits of Classic Backscattering Communications: a Quantum Tunneling RFID Tag*”; 2017 IEEE International Conference on RFID, May 2017 (acceptance rate: 33%).

Please Note: the *IEEE International Conference on RFID* is, as of today, the only IEEE body that collects research articles about RFID. Since there is not an IEEE journal about this technology, the conference is highly ranked.

Every article undergoes through a rigorous selection of three reviewers; less than 35% of the submitted articles is selected every year.

Citations: 1

Amato F., Peterson C. W., Degnan B. P., and Durgin G. D., “*A 45 μ W bias power; 34 dB gain reflection amplifier exploiting the tunneling effect for RFID applications*”; 2015 IEEE International Conference of RFID, April 2015, pp. 137 – 144, DOI: 10.1109/RFID.2015.7113084 (acceptance rate: 30%).

Citations: 9

Alhassoun M., **Amato F.**, and Durgin G. D., “*A Multi-Modulation Retrodirective Feed Network for Backscatter Communication in RFID Tags*”; 2017 IEEE International Symposium on Personal, Indoor and Mobile Radio Communications, October 2017 (*accepted*)

Amato F., and Durgin D. G., “*Signal-to-Noise Ratio Measurements for IoT Communications with Quantum Tunneling Reflectors*”; 2016 IEEE 3rd World Forum on Internet of Things (WF-IoT), December 2016, pp. 383-388, DOI: 10.1109/WF-IoT.2016.7845420

Citations: 2

Akbar M. B., **Amato F.**, Claessen A., and Durgin G. D., “*Broadband backscatter based technique to identify the presence of skimming electronics on payment terminals*”, 2016 IEEE Radio and Wireless Symposium (RWS), January 2016, pp. 141 – 144, DOI: 10.1109/RWS.2016.7444387

Citations: 1

Amato F., et al., “*5.8 GHz Energy Harvesting of Space Based Solar Power Using Inkjet Printed Circuits on a Transparent Substrate*”, 2015 IEEE International Conference on Wireless for Space and Extreme Environments (WiSEE), December 2015, pp/ 1 – 3, DOI: 10.1109/WiSEE.2015.7393105

Amato F., Peterson C. W., Akbar M. B., and Durgin G. D., “*Long range and low powered RFID tags with tunnel diode*”, 2015 IEEE International Conference on RFID-Technologies and Applications

(RFID-TA), September 2015, pp 182 – 187, DOI: 10.1109/RFID-TA.2015.7379815

Citations: 4

Akbar M.B., **Amato F.**, Durgin G. D., Pisharody G., Suh S. Y., “*RFID tag load impedance measurement using backscattered signal*”, 2015 IEEE International Symposium on Antennas and Propagation USNC/URSI National Radio Science Meeting, July 2015, pp. 1762 – 1763, DOI: 10.1109/APS.2015.7305270

Citations: 1

Grotz J., Braun-Lois A., Coutelier T., Guedin E., **Amato F.**, et al. “*Multi Input LNB-Demonstrator of a Reflector Feed Array Receiver for Satellite Broadcast Reception*”, 2012 2nd Evolutions in Satellite Telecommunication User Ground Segments Workshop on Satcom User Terminal Antennas., November 2012, URN: urn:nbn:se:kth:diva-103437

Marrocco G. and **Amato F.**, “*Self-sensing passive RFID: From theory to tag design and experimentation*”, 2009 IEEE European Microwave Conference (EuMC), September 2009, pp. 1 – 4, DOI: 10.23919/EUMC.2009.5296345

Citations: 63

Books (Chapters) Marrocco G., Occhiuzzi C., **Amato F.** (2010) Sensor-Oriented Passive RFID. In: Giusto D., Iera A., Morabito G., Atzori L. (eds) *The Internet of Things*. Springer, New York, NY, pp. 273 – 282, DOI: 10.1007/978-1-4419-1674-7_26

Citations: 10

Technical Reports Akbar M. B., **Amato F.**, and Durgin G. D., “*Intel RFID Toll Tag Project: Phase I, Final Report*”. 30 maggio 2014, Georgia Institute of Technology. (*Confidential*)

Akbar M. B., **Amato F.**, and Durgin G. D., “*Electromagnetic Integrity and Security Assay (ELISA)*”. 30 maggio 2015, Georgia Institute of Technology. (*Confidential*)