

## **Dr. Gregory J. Mazzaro**

Professor of Electrical Engineering  
Department of Electrical & Computer Engineering  
The Citadel, The Military College of South Carolina  
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### Brief Biography

From 2009 to 2013, Dr. Mazzaro worked at the United States Army Research Laboratory (ARL) in Adelphi, MD as an Electronics Engineer. In the Fall of 2013, he joined the faculty of the Department of Electrical & Computer Engineering at The Citadel. In the Spring of 2024, he was promoted to the rank of Professor.

While at ARL, Dr. Mazzaro was a member of the Radio-Frequency (RF) Signal Processing and Modeling Branch of the Sensors and Electron Devices Directorate. His primary responsibilities were (a) to design, prototype, and evaluate RF circuits for linear ultra-wideband radar, (b) to design and conduct experiments to exploit the electronic properties of RF devices using nonlinear radar, and (c) to measure and catalogue the electromagnetic properties of soils and energetic materials, in the laboratory as well as in-situ.

Dr. Mazzaro has authored more than 100 publications and is a named inventor on 10 patents. His research focuses on studying the unintended behaviors of RF electronics illuminated by electromagnetic waves and on developing experimental radars for the remote detection and characterization of those electronics.

In 2012, Dr. Mazzaro received a *Research & Development Achievement* award from the U. S. Army for his ring-resonator technique which identifies the dielectric properties of explosive materials and soils. Since 2011, Dr. Mazzaro has served as a technical program committee member and session chairman for the international *SPIE Defense & Commercial Sensing* annual conference. At The Citadel, Dr. Mazzaro is currently the course director for *Electromagnetic Fields, Antennas & Propagation, Interference Control in Electronics, Electrical Laboratory I*, and *Electrical Laboratory II*.

### Education

Ph.D., Electrical Engineering, North Carolina State University, *Raleigh, NC*, 2009  
M.S., Electrical Engineering, State University of New York, *Binghamton, NY*, 2006  
B.S., Electrical Engineering, Boston University, *Boston, MA*, 2004, *summa cum laude*

### Areas of Expertise

Radar: Non-linear and ultra-wideband  
Radio-frequency (RF) electronics and systems  
Electromagnetic fields and waves

## Experience

Professor of Electrical Engineering, The Citadel, *Charleston, SC*, 2024–present  
Engineering Consultant, General Technical Services, *Wall Township, NJ*, 2022–2025  
Engineering Consultant, Defense Engineering Services, *Ladson, SC*, 2024  
Associate Professor of Electrical Engineering, The Citadel, *Charleston, SC*, 2018–2024  
Engineering Consultant, Fibertek, Inc., *Herndon, VA*, 2019–2022  
Assistant Professor of Electrical Engineering, The Citadel, *Charleston, SC*, 2013–2018  
Engineering Consultant, General Technical Services, *Wall Township, NJ*, 2014–2019  
Electronics Engineer, U.S. Army Research Laboratory, *Adelphi, MD*, 2009–13  
Intern, U.S. Army Research Laboratory, *Adelphi, MD*, Summer 2007  
Research Assistant, Electronics Research Laboratory, N.C. State Univ., *Raleigh, NC*, 2006–09  
Research Scientist, U.S. Air Force Research Laboratory, *Rome, NY*, Summer 2006

## Teaching / Involvement with Students / Service to My School

### instructor, undergraduate courses

*Electromagnetic Fields*, Electrical & Computer Eng. Dept., The Citadel, 11 semesters  
*Electrical Laboratory II*, Electrical & Computer Eng. Dept., The Citadel, 10 semesters  
*Electrical Laboratory I*, Electrical & Computer Eng. Dept., The Citadel, 8 semesters  
*Antennas & Propagation*, Electrical & Computer Eng. Dept., The Citadel, 8 semesters  
*Interference Control in Electronics*, Electrical & Comp. Eng. Dept., The Citadel, 7 semesters  
*Fundamentals of Electr. Engineering*, Elec. & Comp. Eng. Dept., The Citadel, 5 semesters  
*Electric Circuit Analysis I*, Electrical & Computer Eng. Dept., The Citadel, 5 semesters  
*Principles of Electrical Engineering*, Elec. & Comp. Eng. Dept., The Citadel, 4 semesters  
*Electric Circuit Analysis II*, Electrical & Computer Eng. Dept., The Citadel, 4 semesters  
*Electrical Laboratory III*, Electrical & Computer Eng. Dept., The Citadel, 2 semesters  
*Communications Engineering*, Electrical & Computer Eng. Dept., The Citadel, 2 semesters  
*Introduction to Engineering*, School of Engineering, The Citadel, 2 semesters  
*Signals & Systems*, Electrical & Computer Eng. Dept., The Citadel, 1 semester  
*Electrical & Computer Engineering Seminar*, ECE Department, The Citadel, 1 semester  
*Electricity & Magnetism*, Fundamentals of Eng. Exam review -- Oct. '13, Mar. '16, Feb. '18

### instructor, graduate courses

*Radio-Frequency Systems*, Electrical & Computer Eng. Dept., The Citadel, 6 semesters

*Electromagnetic Compatibility*, Electrical & Computer Eng. Dept., The Citadel, 2 semesters

*Digital Communications*, Electrical & Computer Eng. Dept., The Citadel, 2 semesters

advisor, student projects/research

senior design capstone project, Electrical & Computer Eng. Dept., The Citadel, 2023-24:

J. Aiken, D. Calhoun, R. Huckaby, F. Vogel -- lightning detection and mapping system

graduate independent study, Electrical & Computer Eng. Dept., The Citadel, 2023-24:

J. Rasure, "Adjustable-Back-Short Waveguide-to-Coaxial Adapter" (Spring 2024),

"Millimeter-Wave Pyramidal Horn Antenna Design" (Fall 2023)

senior design capstone project, Electrical & Computer Eng. Dept., The Citadel, 2022-23:

R. Fischer, A. Justman, R. Khayat, J. Rasure -- self-healing wireless network via drone

senior design capstone project, Electrical & Computer Eng. Dept., The Citadel, 2021-22:

J. Dobson-Lewis, B. Marr, D. R. Morgan, A. Nicolas -- GPS-guided rocket

advanced-placement research, Academic Magnet High School, North Charleston, SC:

J. B. Benton, "Effect of Medium... on the Generation of a Stable Plasma Arc", Mar. 2022

summer doctoral research internship, U. S. Army Research Laboratory, May-June 2021:

A. Bouvy, "A Dual-Band Patch Antenna... for Nonlinear Radar Applications"

published in the proceedings of the 2022 *USNC-URSI National Radio Science Meeting*

senior design capstone project, Electrical & Computer Eng. Dept., The Citadel, 2019-20:

R. Arnold, A. Bergeron, C. Smith, V. Voskian, R. Weimar -- drink-pouring robot

senior design capstone project, Electrical & Computer Eng. Dept., The Citadel, 2018-19:

M. Collins, M. Corrigan, A. McKenzie, K. Miller

IEEE SoutheastCon 2019 Student Hardware (Robotics) Competition

senior design capstone project, Electrical & Computer Eng. Dept., The Citadel, 2018-19:

J. Anderson, G. Atwater, A. Shugan, J. Summers -- electronic-scoring cornhole game

undergraduate research, Electrical & Computer Eng. Dept., The Citadel, Spring 2018:

W. J. Widener, "Anechoic Chamber Construction and Characterization..."

winner, Design division, Student Excellence Day Poster Session, The Citadel, Mar. 2018

senior design capstone project, Electrical & Computer Eng. Dept., The Citadel, 2017-18:

R. Callahan, G. DeCecco, N. Henson, J. Sligh, K. Thomas

IEEE SoutheastCon 2018 Student Hardware (Robotics) Competition

senior design capstone project, Electrical & Computer Eng. Dept., The Citadel, 2017-18:

C. Braddock, J. Cunningham, A. Sharpe, T. Phucharoen

IEEE SoutheastCon 2018 Student Hardware (Robotics) Competition

summer undergraduate research internship, U. S. Army Research Laboratory, June 2017:

A. J. Sherbondy, "Detection of... Electronic Radar Targets by Acoustic-EM Waves"

printed in the proceedings of *SPIE Defense & Commercial Sensing 2018* in Orlando, FL

published as a *U. S. Army Research Laboratory Technical Report* in July 2017

senior design capstone project, Electrical & Computer Eng. Dept., The Citadel, 2016-17:  
A. Bracey, J. Clark, K. Hamlin, D. Monahan, C. Snider  
IEEE SoutheastCon 2017 Student Hardware (Robotics) Competition

senior design capstone project, Electrical & Computer Eng. Dept., The Citadel, 2016-17:  
W. Crosby, T. Deese, M. Gill, W. Pauley, C. Smithey -- "Home Security Monitor"

summer undergraduate research internship, U. S. Army Research Laboratory, July 2016:  
A. J. Sherbondy, "Linearizing an Intermodulation Radar Transmitter"  
printed in the proceedings of *SPIE Defense & Commercial Sensing 2017* in Anaheim, CA  
published as a *U. S. Army Research Laboratory Technical Report* in Sept. 2016

senior design capstone project, Electrical & Computer Eng. Dept., The Citadel, 2015-16:  
B. Bilbo, G. Evatt, C. Potts, K. Price -- "Port Logistics Robot" autonomous vehicle

senior design capstone project, Electrical & Computer Eng. Dept., The Citadel, 2015-16:  
A. Jordan, B. Shelters, S. Cheshire, S. Bell, T. Brown -- "Skyfall" RF signal jammer

summer undergraduate research internship, U. S. Army Research Lab., July-Aug. 2015:  
S. F. McGowan, "Phase Responses of Harmonic Radar Targets"  
printed in the proceedings of *SPIE Defense & Commercial Sensing 2016* in Baltimore, MD  
published as a *U. S. Army Research Laboratory Technical Report* in Oct. 2015

undergraduate research, Electrical & Computer Eng. Dept., The Citadel, Spring 2015:  
P. J. Singletary and C. A. Smith, "Half-Wave Parabolic Reflector Antenna Optimization"  
participants, Citadel Student Research Conference 2015, The Citadel, Mar. 2015

senior design capstone project, Electrical & Computer Eng. Dept., The Citadel, 2014-15:  
R. Schroer, D. Keller, J. Diaz-Jimenez, B. Feals, K. McSwain, D. Walters  
IEEE SoutheastCon 2015 Student Hardware (Robotics) Competition

undergraduate research, Electrical & Computer Eng. Dept., The Citadel, Fall 2014:  
E. R. Eisenach, "Evaluation of an Ultra-Wideband Diplexer...using Gaussian Pulses"  
published in the proceedings of *IEEE SoutheastCon 2015* in Ft. Lauderdale, FL

senior design capstone project, Electrical & Computer Eng. Dept., The Citadel, 2013-14:  
M. Straniere, P. L. Su, J. S. Bateman, D. S. Jackson -- "The Fluidic Circuit"

summer doctoral research internship, U. S. Army Research Laboratory, June-July 2013:  
K. A. Gallagher, "Linearization of a Harmonic Radar Transmitter by... Filter Reflection"  
published in the proceedings of the *2015 IEEE Radar Conference* in Cincinnati, OH

summer doctoral research internship, U. S. Army Research Laboratory, June-Aug. 2012:  
J. M. Wetherington, "High Dynamic Range Measurement... using Analog Cancellation"  
published as a *U. S. Army Research Laboratory Technical Report* in Oct. 2012

summer doctoral research internship, U. S. Army Research Laboratory, June-Aug. 2010:

J. Hu, “Portable Ring Resonator Permittivity Measurement System”  
 presented at the *2011 USNC-URSI National Radio Science Meeting* in Boulder, CO

special member, committee, *Doctor of Philosophy in Electrical Engineering*

Rita Abad-Lima, Texas Tech University, graduated Dec. 2024  
 dissertation: “RF Front-End Optimization for Harmonic Radar Architectures”

Alex Bouvy, University of Wisconsin-Madison, graduated Dec. 2022  
 dissertation: “Compact Antennas for Military Communications... and Radar Applications”

Kyle Gallagher, Pennsylvania State University, graduated Dec. 2015  
 dissertation: “Harmonic Radar: Theory and Applications...”

faculty advisor, The Citadel Student Branch of the IEEE, 2014-2020 and 2023-24

member, committees at The Citadel

college-wide

- Undergraduate Curriculum Committee -- 2015-19, 2019-20 (chair), 2021-25
- Faculty Senate -- 2022-25
- Faculty Innovative Instructional Technology Mini-Grant Reviews -- Fall 2023
- Search Committee, Dean of the School of Engineering -- 2021
- Faculty Awards Committee -- 2014-15, 2015-16

School of Engineering -- Probationary Review

- Spring 2025: Drs. Aggarwal, DeVoria, Elamin, MacGavin, Niksiar, Oruc
- Fall 2024: Drs. Bolborici, Dávila-Montero
- Spring 2024: Drs. Bolborici, Dávila-Montero
- Spring 2023: Dr. Integlia
- Fall 2022: Dr. DeVoria
- Spring 2022: Drs. Bierman, DeVoria, Integlia, Ragan, Washuta
- Fall 2021: Drs. Elamin, Niksiar, Righter, Vesali
- Spring 2020: Drs. Bass, Bierman, Geathers, Integlia, Plumblee, Righter
- Fall 2019: Drs. Washuta, Ragan

Department of Electrical & Computer Engineering

- Lawton-Ellis Teaching Award Selection Committee -- 2018–21, 2023–25
- Scholarship Selection Committee -- 2014–20, 2021–25 (chairman)
- Search Committee, Dept. Chair -- Spring 2020 and 2025: selected Dr. Mark McKinney
- Search Committee, New Faculty Members
  - Fall 2024: hired Dr. Shailee Yagnik
  - Spring 2024: hired Dr. Shobhit Aggarwal
  - Spring 2023: hired Dr. Valentin Bolborici
  - Spring 2022: hired Dr. Sylmarie Dávila-Montero
  - Summer 2019: hired Dr. Ryan Integlia
- Post-Tenure Review Committee -- Dr. Ron Hayne, Spring 2025

member, committee, tenure & promotion -- Dr. Chandra Pappu, Union College, Oct. 2024

## Research Activities / Service to the Engineering Discipline

### patents awarded (10)

“Method... Passive Transmitter Based Synthetic Aperture Radar” (US patent # 11,131,741)  
“Passive Non-Linear Synthetic Aperture Radar...” (US patent # 10,649,080)  
“...Detecting Objects using... Radio and Acoustic Signals” (US patent # 10,564,280)  
“...Locating Targets Using Non-Linear Radar... Matched Filter...” (US patent # 10,234,543)  
“Multitone Radar with Range Determination and Method of Use” (US patent # 10,203,405)  
“Automated Cancellation of Harmonics... Feed-Forward...” (US patent # 10,018,707)  
“Combined Radar Assembly... Linear and Nonlinear...” (US patent # 9,476,973)  
“Method and Apparatus for Cognitive Nonlinear Radar” (US patent # 9,435,882)  
“Multitone Harmonic Radar and Method of Use” (US patent # 9,395,434)  
“... Meander-Line Ring Resonator” (US patent # 9,151,787)

### patents pending

“Harmonic Radar Scanner for Electronics” (USPTO application #18/749,826)  
“Multi-Mode Nonlinear Junction Detector”

### conference chairman

#### *SPIE Defense & Commercial Sensing*

2025 -- Radar Sensor Technology XXIX, Orlando, FL (7 sessions, 22 papers)  
2024 -- Radar Sensor Technology XXVIII, National Harbor, MD (10 sessions, 39 papers)  
2023 -- Radar Sensor Technology XXVII, Orlando, FL (8 sessions, 30 papers)

### session chairman / moderator

#### *ASEE Southeastern Section Conference*

“Laboratories” session, Marietta, GA, Mar. 2024  
“Electrical/Software/Computer Engineering” division, Charleston, SC, Mar. 2022

#### *SPIE Defense & Commercial Sensing*

“Algorithms & Processing Techniques,” Radar Sens. Tech. XXIX, Orlando, FL, Apr. 2025  
“Applications and Exploitation Techniques I,” RST XXVIII, National Harbor, MD, 2024  
“Waveforms and Phenomenology,” Radar Sens. Tech. XXVI, Orlando, FL, Apr. 2022  
“Non-Linear Radar and Arbitrary Waveforms,” Radar Sens. Tech. XXV, online, Apr. 2021  
“System Development,” Radar Sensor Tech. XXIII conference, Baltimore, MD, Apr. 2019  
“Algorithms and Processing I,” Radar Sensor Tech. XXII conf., Orlando, FL, Apr. 2018  
“Components and Technology,” Radar Sensor Tech. XXI conf., Anaheim, CA, Apr. 2017  
“Indoor and Urban Imaging,” Radar Sensor Tech. XXI conf., Anaheim, CA, Apr. 2017

“Programs and Systems,” Radar Sensor Tech. XX conference, Baltimore, MD, Apr. 2016  
*IEEE SoutheastCon*

“Sensors and Measurements Systems -- Track 7,” online, Mar. 2021  
*ASEE Annual Conference & Exposition*

“Electromagnetics & Power Education,” New Orleans, LA, June 2016  
*SPIE Defense, Security, & Sensing*

“Nonlinear Radar,” Radar Sensor Technology XIX conference, Baltimore, MD, May 2015

“Programs & Systems,” Radar Sensor Tech. XVIII conference, Baltimore, MD, May 2014

“Phenomenology,” Radar Sensor Technology XVI conference, Baltimore, MD, Apr. 2012

“Through-the-Wall Sensing,” Radar Sensor Tech. XVI conf., Baltimore, MD, Apr. 2012

“Through-the-Wall Radar,” Radar Sensor Tech. XV conference, Orlando, FL, Apr. 2011

“Phenomenology,” Radar Sensor Technology XV conference, Orlando, FL, Apr. 2011

technical program committee member / paper reviewer

*ASEE Southeastern Section Conference*, Starkville, MS, Mar. 2025

*ASEE Southeastern Section Conference*, Marietta, GA, Mar. 2024

*AP-S/URSI Int. Symposium & Radio Science Meeting*, Portland, OR, July 2023

*ASEE Southeastern Section Conference*, Fairfax, VA, Mar. 2023

*IEEE Radar Conference*, New York, NY, Mar. 2022

*IEEE Radar Conference*, online, Apr. 2021

*SPIE Defense & Commercial Sensing*, online, Apr. 2021

*IEEE SoutheastCon*, online, Mar. 2021

*IEEE International Radar Conference*, online, Apr. 2020

*SPIE Defense & Commercial Sensing*, online, Apr. 2020

*IEEE SoutheastCon*, Raleigh, NC, Mar. 2020

*IEEE Radar Conference*, Boston, MA, Apr. 2019

*IEEE SoutheastCon*, Huntsville, AL, Apr. 2019

*SPIE Defense & Commercial Sensing*, Baltimore, MD, Apr. 2019

*IEEE Radar Conference*, Oklahoma City, OK, Apr. 2018

*IEEE SoutheastCon*, St. Petersburg, FL, Apr. 2018

*SPIE Defense & Commercial Sensing*, Orlando, FL, Apr. 2018

*SPIE Defense & Commercial Sensing*, Anaheim, CA, Apr. 2017

*SPIE Defense & Commercial Sensing*, Baltimore, MD, Apr. 2016

*IEEE SoutheastCon*, Norfolk, VA, Mar. 2016  
*SPIE Defense, Security, & Sensing*, Baltimore, MD, Apr. 2015  
*SPIE Defense, Security, & Sensing*, Baltimore, MD, May 2014  
*IEEE SoutheastCon*, Nashville, TN, Mar. 2011  
*IEEE SoutheastCon*, Charlotte, NC, Mar. 2010

peer reviewer, technical publications

*IEEE Journal of Microwaves* -- Apr. 2025  
*ScienceDirect Digital Signal Processing* -- Mar. 2024  
*SPIE Journal of Applied Remote Sensing* -- Nov. 2023  
*IEEE Trans. on Aerosp. & Electr. Systems* -- May 2021, Aug. 2021, Dec. 2022, Sept. 2023  
*IEEE Aerospace & Electronic Systems Magazine* -- July 2023  
*IEEE Transactions on Geoscience & Remote Sensing* -- June 2017, Sept. 2022, Dec. 2022  
*IEEE Transactions on Microwave Theory & Techniques* -- Aug. 2021, Jan. 2022  
*MDPI Remote Sensing journal* -- Nov. 2021  
*IEEE Transactions on Instrumentation and Measurement* -- Oct. 2021  
*IEEE Microwave and Wireless Components Letters* -- June/Aug. 2013, Dec. 2019, July 2021  
*IEEE Transactions on Signal Processing* -- June 2021  
*MDPI Electronics journal* -- Feb. 2021  
*MDPI Applied Sciences journal* -- July 2018, July 2020  
*IEEE Wireless Communications Magazine* -- June 2020  
*MDPI Data journal* -- May 2020  
*MDPI Sensors journal* -- June 2016, Aug. 2016, Dec. 2017, Mar. 2018, Apr. 2020  
*EuMA Internat. J. of Microwave & Wireless Techn.* -- Dec. 2016, Mar. 2017, Dec. 2019  
*IEEE Sensors Letters* -- Feb./Mar./May/Dec. 2017, June 2018, Mar. 2019, Sept. 2019  
*IEEE J. of Selected Topics in Applied Earth Observations & Remote Sensing* -- Oct. 2017  
*Ecology and Evolution* -- Mar. 2017  
*IEEE Signal Processing Letters* -- Feb. 2017  
*AEU International Journal of Electronics and Communications* -- Oct. 2016  
*IEEE Sensors journal* -- Dec. 2013

editor, special session

*MDPI Remote Sensing journal* -- “Nonlinear Junction Detection and Harmonic Radar”, 2022

Other Participations



#### reviewer, proposals

Dutch Research Council (NWO) *Applied & Engineering Sciences* grant -- Nov. 2021

*Army Research Office* grants -- Apr. 2015, Jan. 2020, Apr. 2022

*John Wiley & Sons, Inc.* new textbooks -- Dec. 2015, Feb. 2016

#### member

Institute of Electrical & Electronics Engineers (IEEE)

Senior Member, 2015–present // Member, 2009–2015 // Student Member, 2004–2009

Phi Kappa Phi honor society, 2021–present

Sigma Xi honor society, 2021–present

Tau Beta Pi (TBP) honor society, 2015–present

Standoff Inverse Analysis & Manipulation of Elec. Sys. (SIAMES) group, NCSU, 2006–09

#### certifications

Professional Engineer -- registered in South Carolina, license # 42043, Nov. 2023

passed Principles & Practice of Engineering exam, North Charleston, SC, Oct. 2023

passed Fundamentals of Engineering exam, Boston, MA, Apr. 2004

IPC Specialist J-STD-001 (Requirements for Soldered... Assemblies), # J001-S 18024968

#### attendee

“Course Modalities,” Center for Excellence and Innovation in Teaching, Learning and Distance Education -- The Citadel, Oct. 2023

Online Teaching Faculty Academy, The Citadel, Spring 2016

Mini-ExCEED Teaching Workshop, The Citadel, Charleston, SC, Jan. 2014

NATO Adv. Studies Inst., “Unexploded Ordnance Detection...,” Il Ciocco, Italy, July 2008

#### volunteer / departmental representative

South Carolina Science Olympiad -- The Citadel, Charleston, SC

2024 -- “Wind Power” event -- written exam and fan-blade electricity-generation test

2023 -- “WiFi Lab” event -- written exam and prototype-antenna wireless-connection test

chaperone, Ethics-in-Engineering Case Competition, Bethesda, MD

sponsored by The Lockheed Martin Corporation -- 3 trips -- Feb. 2023–25

Innovation, Design, & Educational Activities in STEM camps

sponsored by NIWC Atlantic -- 2 camps -- June-July 2022

STEM Tent at the Charleston Air Expo

table to advertise the Citadel Dept. of Electrical & Computer Engineering -- Apr. 2022

Citadel Leadership Day

outreach to the Charleston Charter School of Math & Science -- Oct. 2024  
Senior Leadership Integration Seminar, Santee Cooper -- Oct. 2023  
Sophomore Service Project, FIRST Lego League -- Oct. 2014–17, 19, 21  
Senior Leadership Integration Seminar, SCANA/SCE&G -- Oct. 2013

Richland County District 2 ALERT

visits to the Electrical & Computer Engineering Department -- Fall 2014, 16, 22, 24

Citadel Pre-Knob (“Inside-the-Gates”) Orientations

Dept. of Elec. & Comp. Eng. -- 2013–20, 2021–25

## Recognition / Honors

### local news / media

*Post & Courier*, article by John Ramsey, published 6-July-2023

“At The Citadel, research finds new way to see buried bombs”

*Citadel Today*, article published 1-Nov-2021

“Citadel professor earns 10<sup>th</sup> patent on inventions to protect American soldiers”

*Citadel Today*, article published 15-Mar-2021

“Engineering professor... collaboration between The Citadel and Army Research Lab”

*Citadel Today*, article published 28-Jun-2019

“Mazzaro continuing project at Army Research Lab to help soldiers detect hidden devices”

*Citadel Today*, article published 17-Mar-2017

“Engineering professor invents potentially lifesaving military technology”

*Post & Courier*, article by Thad Moore, published 12-Mar-2017

“It's on his radar: Charleston professor sees new use for detection technology”

### award winner

*C. A. Medbery Excellence in Teaching Award*, The Citadel, 2025

*Lawton & Ellis Teaching Award*, Elec. & Comp. Eng. Dept., The Citadel -- 2017, 2022

*Faculty Excellence in Research*, The Citadel, 2017

*U. S. Army Research & Development Achievement*, 2012

“Ring-Resonator Technique for Identification of Dielectric Properties of IED Charges...”

## Publications (119)

### Journal Articles (14)

A. Bouvy, G. Mazzaro, K. Gallagher, K. Sherbondy, and N. Behdad, “A Dual-Band Patch Antenna Employing a Folded Probe Feed for Nonlinear Radar Applications,” *IEEE Transactions on Antennas & Propagation*, Vol. 71, No. 3, Mar. 2023, pp. 2070-2081.

- G. J. Mazzaro, "Detection of Radio-Frequency Electronics by Stimulated Emission of Carrier Modulation," *IEEE Transactions on Aerospace and Electronic Systems*, Vol. 58, No. 2, pp. 1021-1028, Apr. 2022.
- A. Bouvy, G. Mazzaro, K. Gallagher, K. Sherbondy, and N. Behdad, "A Dual-Band Patch Antenna Employing a Folded Probe Feed for Nonlinear Radar Applications," submitted to *IEEE Transactions on Antennas & Propagation*, Feb. 2022.
- B. Perez, G. Mazzaro, T. Pierson, and D. Kotz, "Detecting the Presence of Electronic Devices in Smart Homes Using Harmonic Radar Technology," *MDPI Remote Sensing* special issue, "Nonlinear Junction Detection and Harmonic Radar," Jan. 2022.
- R. M. Narayanan, K. A. Gallagher, G. J. Mazzaro, A. F. Martone, and K. D. Sherbondy, "Hardware Design of a High Dynamic Range Radio Frequency Harmonic Measurement System," *MDPI Instruments*, Vol. 2, No. 3, 16 pages, 2018.
- G. J. Mazzaro, A. F. Martone, K. I. Ranney, and R. M. Narayanan, "Nonlinear Radar for Finding RF Electronics: System Design and Recent Advancements," *IEEE Transactions on Microwave Theory & Techniques*, Vol. 65, No. 5, pp. 1716-1726, May 2017.
- K. A. Gallagher, R. M. Narayanan, G. J. Mazzaro, A. F. Martone, and K. D. Sherbondy, "Static and Moving Target Imaging using Harmonic Radar," *MDPI Electronics*, Vol. 6, No. 2, 30 pages, Apr. 2017.
- A. F. Martone, K. A. Gallagher, K. D. Sherbondy, K. I. Ranney, T. V. Dogaru, G. J. Mazzaro, and R. M. Narayanan, "Adaptable Bandwidth for Harmonic Step-Frequency Radar," *International Journal of Antennas and Propagation*, Vol. 2015, Article 808093, 15 pages, July 2015.
- G. J. Mazzaro, A. F. Martone, and D. M. McNamara, "Detection of RF Electronics by Multitone Harmonic Radar," *IEEE Transactions on Aerospace and Electronic Systems*, Vol. 50, No. 1, pp. 477-490, Jan. 2014.
- G. J. Mazzaro, M. B. Steer, and K. G. Gard, "Intermodulation Distortion in Narrowband Amplifier Circuits," *IET Microwaves, Antennas, & Propagation*, Vol. 4, No. 9, pp. 1149-1156, Sept. 2010.
- G. J. Mazzaro, K. G. Gard, and M. B. Steer, "Linear Amplification by Time-Multiplexed Spectrum," *IET Circuits, Devices, & Systems*, Vol. 4, No. 5, pp. 392-402, Sept. 2010.
- C. S. Saunders, G. J. Mazzaro, and M. B. Steer, "Robust Reduced-Order Modeling of Distributed Linear Networks," *IET Microwaves, Antennas, & Propagation*, Vol. 4, No. 7, pp. 962-973, July 2010.
- G. J. Mazzaro, M. B. Steer, and K. G. Gard, "Filter Characterization Using One-Port Pulsed RF Measurements," *IET Microwaves, Antennas, & Propagation*, Vol. 3, No. 2, pp. 303-309, Mar. 2009.
- G. J. Mazzaro, M. B. Steer, K. G. Gard, and A. L. Walker, "Response of RF Networks to Transient Waveforms: Interference in Frequency-Hopped Communications," *IEEE Transactions on Microwave Theory & Techniques*, Vol. 56, No. 12, pp. 2808-2814, Dec. 2008.

## Conference Proceedings (71)

G. J. Mazzaro, “Mini-Laboratory Activities for Observing Electromagnetic Fields in a Required Undergraduate Course for Electrical Engineers,” presented at the *ASEE Southeastern Section Conference*, Starkville, MS, Mar. 2025.

S. Aggarwal and G. J. Mazzaro, “Enhancing Student Engagement in Electrical Engineering: The Impact of Hands-On Learning Tools on Student Engagement,” presented at the *ASEE Southeastern Section Conference*, Starkville, MS, Mar. 2025.

G. J. Mazzaro, K. L. Skenes, and T. A. Wood, “Growth of Student Awareness Within a Discipline-Agnostic Introduction-to-Engineering Course,” presented at the *ASEE Annual Conference & Exposition*, Portland, OR, June 2024.

G. J. Mazzaro, K. L. Skenes, and T. A. Wood, “Mini-Laboratory Activities to Reinforce Counter-Intuitive Principles in a Senior-Undergraduate Course on Electromagnetic Compatibility,” presented at the *ASEE Southeastern Section Conference*, Kennesaw, GA, Mar. 2024.

T. A. Wood, K. L. Skenes, and G. J. Mazzaro, “The Eclectic Reader for Introduction to Engineering,” presented at the *ASEE Southeastern Section Conference*, Kennesaw, GA, Mar. 2024.

B. Perez, C. Martinez, T. Pierson, G. Mazzaro, and D. Kotz, “Evaluating the Practical Range of Harmonic Radar to Detect Smart Electronics,” presented at the *IEEE Military Communications Conference*, Boston, MA, Nov. 2023.

B. Perez, T. Pierson, G. Mazzaro, and D. Kotz, “Identification and Classification of Electronic Devices Using Harmonic Radar,” presented at the *IEEE International Conference on Distributed Computing in Smart Systems and the Internet of Things*, Coral Bay, Cyprus, June 2023.

G. J. Mazzaro, K. L. Skenes, and T. A. Wood, “A Review of Multi-Disciplinary Introduction-to-Engineering Courses and Unified-First-Year Engineering Programs,” presented at the *ASEE Southeastern Section Conference*, Fairfax, VA, Mar. 2023.

G. Mazzaro, K. Gallagher, K. Sherbondy, B. Perez, D. Kotz, and T. Pierson, “Harmonic Response vs. Target Orientation: A Preliminary Study of the Effect of Polarization on Nonlinear Junction Detection,” *Proceedings of the SPIE*, Vol. 12108, pp. 1210803(1-21), May 2022.

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G. J. Mazzaro, “Time-Frequency Effects in Wireless Communication Systems,” *Ph.D. Dissertation*, North Carolina State University, Raleigh, NC, Oct. 2009.

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### Invited Talks

G. J. Mazzaro, “What is Research? An Introduction to Graduate Education,” *45-minute seminar* provided to ELEC 206 (Sept. 2023) and ELEC 422 (Jan. 2024).

G. J. Mazzaro, “Introduction to Ultra-Wideband and Nonlinear Radar,” *2-day seminar*, U.S. Army Command, Control, Communications, Computers, Cyber, Intelligence, Surveillance, and Reconnaissance Center (C5ISR) Research and Technology Integration (RTI) Directorate, Ft. Belvoir, VA, July 2023.

G. J. Mazzaro, “Nonlinear Radar for Locating & Identifying Radio Frequency Electronics,” *45-minute seminar*, Department of Electrical & Computer Engineering, University of Alabama, Tuscaloosa, AL, Apr. 2023.

G. J. Mazzaro, “Technical Communication: A Research Engineer’s Point-of-View,” *45-minute seminar* provided to COMM 260, Apr. 2021.

G. J. Mazzaro, K. D. Sherbondy, and K. A. Gallagher, “Detection of Passive-Infrared-Triggered Devices by Nonlinear Radar,” *45-minute seminar*, U.S. Army Research Laboratory, Adelphi, MD, June 2018.

G. J. Mazzaro, A. J. Sherbondy, K. A. Gallagher, and K. D. Sherbondy, “Hybrid Acoustic-Electromagnetic Radar for Finding and Identifying Electronic Devices,” seminar provided to the *Charleston Chapter of Sigma Xi* at The Citadel, Charleston, SC, Apr. 2018.

G. J. Mazzaro, A. J. Sherbondy, K. A. Gallagher, M. R. Judy, and K. D. Sherbondy, “Nonlinear Radar & Acousto-RF Effects,” *45-minute seminar*, U.S. Army Research Laboratory, Adelphi, MD, Aug. 2017.

G. J. Mazzaro, A. F. Martone, K. A. Gallagher, and R. M. Narayanan, “Nonlinear Radar for Remotely Finding and Identifying Handheld Electronics,” seminar provided to the *Citadel Student Branch of the IEEE*, Charleston, SC, Apr. 2017.

G. J. Mazzaro, A. F. Martone, and K. A. Gallagher, “Nonlinear Radar for Remotely Locating and Identifying Electronic Devices,” seminar provided to the *Charleston Chapter of Sigma Xi* at The Citadel, Charleston, SC, Apr. 2015.

G. J. Mazzaro, A. F. Martone, and K. A. Gallagher, “Using Radar to Locate and Identify RF Electronics,” seminar provided to the *Coastal South Carolina Section of the IEEE*, Charleston, SC, Dec. 2014.

G. Mazzaro, K. Sherbondy, B. Phelan, and F. Koenig, “Introduction to Stepped-Frequency Radar,” *90-minute seminar*, U.S. Army Research Laboratory, Adelphi, MD, June 2013.

G. J. Mazzaro and A. J. Sullivan, "Dielectric Characterization of Materials & Electromagnetic Modeling of UWB GPR for Buried HME Detection," *MSS Tri-Service Radar Symposium, Counter-IED workshop*, Boulder, CO, June 2012.

M. Higgins, G. Mazzaro, A. Martone, D. McNamara, D. Vance, "REDLINE and Sensitive RF Overview," *MSS Tri-Service Radar Symposium, Counter-IED workshop*, Boulder, CO, June 2012.

M. Higgins, M. Berry, G. Mazzaro, and B. Nelson, "The Army Research Laboratory REDLINE Program," *Directed Energy Systems Symposium*, Gaithersburg, MD, Apr. 2012.

G. J. Mazzaro, "Nonlinear Radar Concepts," *RF Signal Processing & Modeling Branch briefing*, U.S. Army Research Laboratory, Adelphi, MD, Jan. 2012.

M. Steer, J. Wilkerson, G. Mazzaro, and J. Wetherington, "Passive Intermodulation Distortion in Microwave Systems," *Fall Meeting of the IEEE Microwave Theory & Techniques Society and Antennas & Propagation Society*, Bergen, Norway, Oct. 2011.

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