

B. Volkan Gurses

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RESEARCH INTERESTS RF/mm-Wave/THz ICs and systems, reconfigurable/self-healing ICs, optical phased arrays, ultra low noise RF/mm-Wave systems, IC receivers for remote sensing and radio astronomy

EDUCATION **California Institute of Technology**, Pasadena, CA

- Ph.D. in Electrical Engineering Sep 2020 - Present
 - Advisor: Prof. Ali Hajimiri
- M.S. in Electrical Engineering Sep 2020 - Present
 - Advisor: Prof. Ali Hajimiri

Georgia Institute of Technology, Atlanta, GA

- B.S. in Electrical Engineering, GPA: 3.94 / 4.00 Aug 2016 - May 2020
 - Research Option Track

AWARDS AND HONORS

- Richard D. Middlebrook Fellowship, California Institute of Technology, Aug 2020
- Tau Beta Pi Fellowship, Tau Beta Pi, Apr 2020 [[News](#)] [[Ann.](#)]
- Roger P. Webb ECE Undergraduate Research Award, Georgia Institute of Technology, Mar 2020 [[Ann.](#)]
- Caltech Engineering and Applied Sciences Division Fellowship, California Institute of Technology, Mar 2020
- Eta Kappa Nu Innovation Scholarship, IEE-HKN Beta Mu Chapter, Feb 2020
- IEEE Microwave Theory and Techniques Society (MTT-S) Undergraduate/Pre-Graduate Scholarship, IEEE MTT-S, Feb 2020 [[News](#)] [[Ann.](#)]
- Radio Club of America Scholarship, Radio Club of America, Feb 2020
- American Geophysical Union Fall Meeting Travel Grant, American Geophysical Union [[Ann.](#)]
- President's Undergraduate Research Award, Georgia Institute of Technology, Dec 2017 [[Ann.](#)] and Aug 2019 [[Ann.](#)]
- Opportunity Research Scholars Program Peer Review Award, Georgia Institute of Technology, Apr 2019 [[Ann.](#)]
- European Union Contest for Young Scientists (EUCYS), EIROforum CERN Special Donated Prize, Sep 2015 [[News](#)] [[Ann.](#)]
- Turkish Scientific and Technological Research Council (TUBITAK) National Secondary School Research Contest, First Prize in Physics, May 2015 [[News](#)]

JOURNAL PAPERS **B. V. Gurses**, M. Huang, and H. Wang, "Folded Inductor-Based Ultra-Compact Passive Structures," in preparation.

B. V. Gurses, K. T. Whitmore, and M. B. Cohen, "Ultra-Sensitive Broadband 'AWESOME' Receiver for Nanovolt Low-Frequency Signals," Review of Scientific Instruments, in review.

B. V. Gurses, M. Huang, and H. Wang, "A Low-Loss Ultra-Compact Folded Inductor-Based Band-pass Filter for 5G NR Applications," IEEE Microwave and Wireless Components Letters, in review.

PEER-REVIEWED
CONFERENCE
PAPERS

E. Slevin, P. Singletary, K. T. Whitmore, **B. V. Gurses**, N. Opalinski, L. Thompson, M. Golkowski, M. B. Cohen, "Broadband VLF/LF Transmission from an Electrically-Small Structure via Time-Varying Antenna Properties," in Proc. of the IEEE AP-S International Symposium on Antennas and Propagation, Jul. 5-10, 2020.

B. V. Gurses, K. T. Whitmore, and M. B. Cohen, "Electric Field Sensor Design for Longwave Radio Reception," in Proc. of the IEEE SoutheastCON, Huntsville, AL, USA, Apr. 11-14, 2019.

DEMONSTRATIONS
AND POSTER
PRESENTATIONS

B. V. Gurses, L. B. Wray, S. Deitke, and G. D. Durgin, "A 2.45 GHz Phased Array-Based Reader for Long-Range RFID Applications," 14th IEEE International Conference on RFID, Orlando, FL, USA, Oct. 2020. (Demonstration) (**Best Poster Award**)

B. V. Gurses, K. T. Whitmore, and M. B. Cohen, "Ultra-Sensitive Broadband Remote Sensing Instrument for Longwave Radio Reception," AGU Fall Meeting 2019, San Francisco, CA, USA, Dec. 2019.

B. V. Gurses and M. B. Cohen, "Electric Field Sensor Design for Longwave Radio Reception," Georgia Tech 14th Undergraduate Research Symposium, Atlanta, GA, USA, Apr. 2019.

J. W. Jiang, S. Kotapati, K. Kim, **B. V. Gurses**, M. Alhassoun, and G. D. Durgin, "A 24 GHz Tag for Next-Generation RFID Systems," 13th IEEE International Conference on RFID, Phoenix, AZ, USA, Apr. 2019.

B. V. Gurses, K. T. Whitmore, and M. B. Cohen, "Low-Noise Broadband Electric Field Receiver for ELF/VLF Radio Reception," Georgia Tech 13th Undergraduate Research Symposium, Atlanta, GA, USA, Apr. 2018.

RESEARCH
EXPERIENCE

California Institute of Technology, Pasadena, CA

Graduate Research Assistant, Caltech High-Speed Integrated Circuits Group Sep 2020 - Present

Georgia Institute of Technology, Atlanta, GA

Undergraduate Researcher, Georgia Tech Electronics and Micro-System Lab Aug 2019 - Sep 2020

- **Reconfigurable Rat-Race Couplers for mm-Wave and sub-THz Applications:** Devised a novel design methodology to develop frequency-reconfigurable wideband rat-race hybrid couplers operating at mm-Wave and sub-THz frequencies (>100 GHz).
- **Folded Inductor-Based Wideband Ultra-Compact Passive Structures:** Devised a novel folded inductor-based design methodology to develop integrated mm-Wave passive structures that are low-loss, wideband, and ultra-compact for multi-band 5G wireless communications.

Undergraduate Researcher, Low-Frequency Radio Group

Jan 2017 - Sep 2020

- **Ultra-Sensitive Remote Sensing Instrument:** Developed a novel ultra-sensitive end-to-end electric field sensing system for low-frequency (<500 kHz) radio reception. The instrument is 20 dB more sensitive than state-of-the-art and has been deployed globally to form the basis for the AWESOME network, a spearheading receiver network for global low-frequency radio science research.

Undergraduate Researcher, Propagation Group

Jan 2019 - May 2020

- **Phased Array Transceiver for Lunar Surface Communications:** Developed an end-to-end 2.4 GHz phased array transceiver that is low power, lightweight, and compact for extravehicular activity (EVA) communications on the lunar surface.
- **24 GHz Semi-Passive RFID Tag:** Developed a next-generation 24-GHz semi-passive RFID tag to improve the bandwidth of RFID systems for tera-scale IoT/IoE applications.

	<i>Undergraduate Researcher, Plasma and Dielectrics Lab</i>	Jan 2017 - May 2018
	<ul style="list-style-type: none"> • Impulse Current Generator for Next-Generation Disconnect Switches: Developed a cost-efficient, reliable and safe-to-use impulse current generator to test the electrical contacts of next-generation high-speed disconnect switches. 	
INDUSTRY EXPERIENCE	Micron Technology, Inc. , Boise, ID	
	<i>HBM Product Engineering Intern, HBM Product and R&D Team</i>	May - Jul 2020
	<ul style="list-style-type: none"> • Developed a data-visualization tool suite and scripts to extract and visualize data from DC validation tests on TSVs (through-silicon vias) of a next-generation HBM (high-bandwidth memory) DRAM 3D IC. 	
	<i>DRAM Product Engineering Intern, Data Analytics and Disposition Team</i>	May - Aug 2019
	<ul style="list-style-type: none"> • Developed a new statistical disposition program to categorize and scrap DRAM wafers and dies of varying quality based on their probe/test data. 	
TEACHING EXPERIENCE	Georgia Institute of Technology , Atlanta, GA	
	<i>Undergraduate Teaching Assistant</i>	Aug - Dec 2019
	Lab teaching assistant of an undergraduate/graduate level course in Electrical and Computer Engineering. Duties included leading lab sessions to more than 50 students for 6 hours per week, answering student questions, giving assignments, and grading assignment submissions.	
	<ul style="list-style-type: none"> • ECE 3043 Circuits, Measurements, and Microelectronics Laboratory, Fall 2019. 	
PROFESSIONAL SERVICE	<ul style="list-style-type: none"> • Reviewer for IEEE Transactions on Geoscience and Remote Sensing, May 2020 - Present • Editor on the Board of Student Publications, Georgia Institute of Technology, Aug 2019 - May 2020 	
	Georgia Institute of Technology , Atlanta, GA	
	<i>The Tower Undergraduate Research Journal, Editor-in-Chief</i>	Aug 2019 - May 2020
	Editor-in-Chief of Georgia Tech's premier interdisciplinary research journal for undergraduates. Assembled and led a 50-person team comprised of undergraduate, graduate students, faculty, and staff. Oversaw the production and publication of <i>The Tower Undergraduate Research Journal</i> .	
OUTREACH	Micron Technology, Inc. , Boise, ID	
	<i>Micron Foundation K-12 STEM Outreach Programs, Volunteer Lead</i>	May 2018 - Jul 2019
	Organized and led Micron outreach events such as the Idaho Science and Aerospace Scholars and Micron Chip Camp that saw the participation of more than 500 K-12 students.	
	Georgia Institute of Technology , Atlanta, GA	
	<i>Student Activities Board for Undergrad Research, VP of Campus Relations</i>	Aug 2016 - May 2018
	Organized info sessions, lab tours, and 1-to-1 tutoring sessions to promote undergraduate research at Georgia Tech.	
AFFILIATIONS	<ul style="list-style-type: none"> • Eta Kappa Nu Electrical Engineering Honor Society, Member • Tau Beta Pi Engineering Honor Society, Member • Sigma Xi Scientific Research Honor Society, Member • IEEE Microwave Theory and Techniques Society, Member • IEEE Solid-State Circuits Society (SSCS), Member • Institute of Electrical and Electronics Engineers (IEEE), Student Member 	<p>Nov 2019 - Present</p> <p>Nov 2019 - Present</p> <p>Sep 2019 - Present</p> <p>Feb 2018 - Present</p> <p>Feb 2018 - Present</p> <p>Sep 2016 - Present</p>