CLAYTON BLOSSER

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EDUCATION

University of Oklahoma, Norman	***GPA 4.00/4.00***
B.S. in Electrical Engineering, minor in Mathematics	***Jul 2018 - Dec. 2020***
M.S. in Electrical Engineering	***Dec. 2020 - May 2022***
Ph.D. in Electrical Engineering	***May 2022 - Expected May 2025***

RESEARCH INTERESTS

My research focuses on the impact and elimination of the linear and time-invariant assumptions on antenna design. This includes investigating a new class of antenna and circumventing fundamental limitations on antennas made using those assumptions.

AWARD(S)

Title:	**National Sceince Foundation Gradute Research Fellowship**	***August 2022***
	Awarded a National Science Foundation fellowship for proposed research into continuous pattern reconfigurable antennas leveraging time-varying, nonlinear devices for use in 5G applications.	

TECHNICAL EXPERIENCE

Position:	**Graduate Research Assistant - Ph.D.**	***May 2021 - Present***
Supervisor:	**Dr. Jessica Ruyle**	
Dissertation:	**Novel electrically small wideband time-varying antennas**	
	Analysis and design of actively loaded antennas. As opposed to co-designed amplifiers and antennas, these designs use amplifiers directly on the antenna to shape the current patterns themselves instead of merely amplifying the incoming signal at the feed.	
Position:	**Graduate Research Assistant - M.S.**	***December 2020 - May 2022***
Supervisor:	**Dr. Jessica Ruyle**	
Thesis:	**Limitations and evaluation of the linear assumption on antenna design**	
	Focused on understanding some of the limitations of nonlinearity and antenna design. This included simulation methods, power analysis, and reconfigurable and magneto-dielectric antennas' potential for nonlinear distortion.	
Title:	**Graduate Naval Research Enterprise Internship Program**	***June - August 2021***
Supervisor:	**Dr. Erica Daly**	
Location:	**Naval Information Warfare Center - Pacific**	
	Investigated leveraging increased efficiency in tuning networks from cryogenic cooling to mitigate drawbacks of Direct Antenna Modulation (DAM) - ultimately circumventing the long-held limitations on electrically small antennas.	
Title:	**Undergrad Naval Research Enterprise Internship Program**	***June - August 2020***
Supervisor:	**Dr. Yolanda Tanner & TeKali Arnold**	
Location:	**Naval Information Warfare Center - Pacific**	
	As a multi-disciplinary team, we investigated several topics including encrypted machine learning, swarm intelligence surveillance, data analysis for benthic microbial fuel cell performance, and design thinking strategies for rapid design and prototyping.	

Title:	**Undergraduate Research**	***January 2019 - December 2020***
Supervisor:	**Dr. Jessica Ruyle**	
Location:	**Radar Innovations Laboratory**	

Construction, testing, and measuring addatively manufactured, miniaturized baluns. Aided in development and testing of a conformal, Inverted F Antenna (IFA) for severe weather applications.

LEADERSHIP EXPERIENCE

Title:	**President/Vice-President of Eta Kappa Nu**	***August 2021 - December 2022***

Awarded membership for exemplary social engagement and academic standing. Membership includes leading exam review sessions for students.

Title:	**FYRE Mentor**	***January 2020 - Present***

I supported undergraduate research interest by serving as a graduate mentor for OU's Honor's Four Year Research Experience (FYRE).

TEACHING EXPERIENCE

Title:	**Lecturing for ECE4693/5693 & ECE3613**	***January 2022 - December 2022***
Supervisor:	**Dr. Jessica Ruyle**	

I helped in Antennas and Electromagnetic Fields I classes as a lecturer, the former being a small, senior/graduate level class and the latter being a large undergraduate course of over 50 students.

Title:	**Tutoring & Exam Reviews for Eta Kappa Nu**	***January 2019 - Present***

Since induction into Eta Kappa Nu, I have served in leading exam reviews for the undergraduate classes:

- **ECE3723 - Circuits II**
- **ECE3613 - Electromagnetic Fields I**
- **ECE3813 - Introductory Electronics**
- **ECE3792 - Signals and Systems**

Title:	**Graduate Teaching Assistant**	***January 2019 - May 2019***
Supervisor:	**Dr. David Schvartzman**	

I worked as a Teaching Assistant for ECE3773 - Circuits Lab. Here, I would tutor students on practical application of circuit analysis, circuit troubleshooting techniques, and introductory PCB fabrication and assembly.

JOURNAL PUBLICATIONS

M. R. Thibodeau, A. L. Bauer, C. G. Blosser, S. Saeedi, J. E. Ruyle and H. H. Sigmarsson, "Frequency Agile Slot Antenna Using Contactless Capacitive Loading," in *IEEE Access*, vol. 10, pp. 99460-99466, 2022.

R. Agasti, C. G. Blosser, J. E. Ruyle and H. H. Sigmarsson, "Tunable SIW-Based Evanescent-Mode Cavity-Backed Slot Antenna With Contactless Tuning," in *IEEE Access*, vol. 11, pp. 42670-42678, 2023, doi: 10.1109/ACCESS.2023.3265571.

CONFERENCES PUBLICATIONS & PRESENTATIONS

Clayton Blosser, Roopan Tuli, and Kurt Schab, "Transient and Integral Methods for Modeling Complex Time-Varying Layered Media," in *URSI International Symposium on Electromagnetic Theory 2023*, Vancouver, BC, 2023.

Clayton Blosser, Hjalti Sigmarsson, and Jessica Ruyle "Power Handling of Varactor Diode-Based Frequency Agile Antennas" in *Proceedings of the 2022 IEEE/URSI International Symposium on Antennas and Propagation*, Denver, CO, July 2022.

Clayton Blosser, Tyler Ikehara, Kurt Schab, and Erica Daly "Cryogenic Direct Antenna Modulation for Broadband, High-Efficiency HF Transmitters." in *2021 Antenna Applications Symposium*, Allerton Park, Monticello, IL, Sept. 2021.

Clayton Blosser, Kurt Schab, Jessica Ruyle, and K.C. Kerby-Patel "Power-Frequency Relations for Electromagentic Structures with Time Varying Loading," in *2021 Antenna Applications Symposium*, Allerton Park, Monticello, IL, Sept. 2021.

George Lemaster, Clayton Blosser, John Huggins, Jessica Ruyle, and Bill Lyles "Investigation of Currents on Coax Cables Connected to Antennas." in *US Federal Government's Center for Antennas and Propagation Conference (CAPCON)*, June 6, 2019.

SKILLS AND TRAINING

Software Proficiency:
High Frequency Simulation Software (ANSYS HFSS), XFDTD, FEKO, Matlab, Python, C. Advanced Design Systems (ADS), Microwave Office (AWR), Multisim, Eagle

Measurement and Automation:
Anechoic Chamber Operation, Real Time Spectrum Analyzer, Vector Network Analyzers, Arbitrary Waveform Generator, Oscilloscope, SCPI Automation with Python

Fabrication Proficiency:
Laser milling, mechanical milling, additive manufacturing with filament and resin, electroplating, photo-lithography