Dr. David S. Ricketts
Full Professor

I.B BRIEF RESUME

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1. Education background:

Ph.D., Electrical Engineering, 2006, Harvard University
M.Sc., Electrical Engineering, 1997, Worcester Polytechnic Institute
B.Sc., Electrical Engineering, 1995, Worcester Polytechnic Institute

2. Professional experience:

Full Professor, 2012 – present, Department of Electrical and Computer Engineering North Carolina State University, Raleigh, NC

Visiting Researcher (Research Scientist), 7/2012 – 8/2013, MTL-ECE Massachusetts Institute of Technology, Cambridge, MA

Visiting Associate Professor, 9/2012-12/2012, School of Engineering and Applied Science Harvard University, Cambridge, MA

Assistant Professor, 2006 – 2012, Department of Electrical and Computer Engineering Carnegie Mellon University, Pittsburgh, PA

Manager of New Product Development &Advanced System Engineering, 2001 – 2003, ON Semiconductor, East Greenwich, RI

Principal Consultant, 1999-2001, Renaissance Design, Inc., Warwick, RI

IC Technology Unit Manager, 1995-1999, American Power Conversion, Billerica, MA

3. Scholarly and creative activities:

Type	*Number*
Books	3
Book Chapters	2
Refereed Journal Article	52
Other Journal Article (submitted)	0
Conference Paper, Refereed	85
Conference Presentation, (no paper)	7
Patent (filed)	4
Academic Workshops Chaired	20
Research Presentations, Invited	66

4. Membership in professional organizations:

IEEE, 1997-present (senior member since 2015)

5. Scholarly and professional honors:

- 2022 Chancellors Innovation Fund
- 2021 William F. Lane Outstanding Teaching Award

- Best Paper Award, IEEE Asia-Pacific Microwave Conference 2016.
- IEEE Senior Member, 2015
- Certificate of Teaching Excellence, Derek Bok Center, Harvard University, 2013
- **NSF CAREER AWARD, 2011.**
- Wimmer Teaching Fellow, Carnegie Mellon University, 2009.
- George Tallman Ladd Research Award, Carnegie Mellon University, 2009.
- National Academy of Engineers Frontiers of Engineering Education Recipient, 2009.
- **DARPA Young Faculty Award, 2008.**
- McGraw Hill Yearbook of Science and Technology, 2008.

6. Professional service on campus:

Faculty Teaching Evaluation Committee (ECE Department) 2022-present
Faculty Search Committee (ECE Department) – Fall/Spring 2021/22 & 2019/20
Course Curricula Committee (ECE Department) - 2015-present
Faculty Search Committee (ECE Department) – Fall/Spring 2016/2017
Senior Design Director Search Committee (ECE Department) - 2014
Participated in Engineering Open House (ECE Department), 2014

7. Professional service off campus:

Advisor DARPA Commercialization Office - 2023-24
Topic Editor, IEEE JMW 2022-2023
Track Editor, IEEE T-MTT Oct 2019-2022
Chair, IEEE Chapter ACME (Joint chapter of Antennas and Propagation (AP), Electronic Packaging Society (EP), Microwave Theory and Techniques (MTT), and Electron Devices (ED) 2019-
Technical Committee **Chair** for IEEE T-MTT 9 Society 2020-2022
Technical Committee **Vice-chair** for IEEE T-MTT 7 Society 2015-2019
Technical Program **Chair**: Enabling Nanomanufacturing for Rapid Innovation, TRC/NSF Workshop, Aug. 2013
Technical Program Committee (member) – IEEE International Microwave Symposium 2014-;
Technical Program Committee IEEE BioWireless 2012-2015.
Session Chair - Nanotechnology, CMOS Emerging Technologies Conf., Banff, Canada 2009; NANO-DDS, Chemically-Synthesized, Biomimetic Systems and Biologically-Inspired Architectures Session, August 2011.

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TSMC and Apple v. MYW Semitech - IPR2026-00066

II.B. INSTRUCTIONAL DEVELOPMENT

Include innovations in courses and curricula**.**

Creation of a new STEM poral interactRF.org (supported by ONR research grant) to teach RF and microwave engineering. This portal supports national education workshops and a full semester online course using an e-learning platform.

ECE 592 Analog Laboratory (graduate). Introduced graduate version of ECE 426 to allow for more advanced hands-on projects.

ECE 426 Analog Laboratory. Re-booted a retired course with Dr. Besnoff (teaching professor). Developed 12 new lectures and an entirely new course project where students build a drone from scratch, making their own printed circuit boards and coding an Arduino for flight control

ECE 714 Advanced Analog IC Design (ADCs). CAF Completed S18. (NCSU) Fall 2015. Developing new course for advanced analog IC design. Includes ~ 35 online lectures, and 10 interactive labs/workshops for students to practice hands on design. Full course, including labs, are available online for the public.

ECE 424/524 – CAF completed S17- 492(592) Radio Systems Design: (NCSU) Spring 2014+. Developed new experiential undergraduate course in radio system design. Includes 34 online lectures, and 10 interactive labs/workshops for students to practice hands on design. Full course, including labs, are available online for the public.

ECE 592 Analog-to-digital Converters: (NCSU) Fall 2013. Developed new course for ADCs as part of ECS circuit's curriculum.

ES139/239 Innovation in Science and Technology (Harvard): Fall 2012. Co-developed new format, assignments and teaching materials for primarily undergraduate innovation course.

ECE 18-605/606 Innovation in Science and Technology (CMU): Fall 2009. Developed interdisciplinary course on innovation between ECE and CMU's Engineering Technology Innovation Management masters program.

ECE 18-513 RF Circuits and Antennas for Wireless Systems (CMU): Fall 2008. Co-developed w. D. Stancil a new capstone design course in RF circuits & antennas.

ECE 18-610 Fundamentals of Modern CMOS Devices (CMU): Spring 2008, Developed introductory graduate course in CMOS device physics.

ECE 18-310 Fundamentals of Semiconductor Devices (CMU): Spring 2007. Developed entirely new content for undergraduate device physics course.

II.C. MENTORING ACTIVITIES

Include undergraduate academic advising and assessments thereof, if applicable, graduate committees, postdoctoral advising, advising student organizations, special projects with students, and Department of Public Instruction assessments of supervising student teaching.

Currently, member of **___4__** PhD and **__0___**MS committees.

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TSMC and Apple v. MYW Semitech - IPR2026-00066

1. Participated in ___**29**_____ Masters/PhD graduate committees.
2. Advisor to __**6**___ nonthesis MS students.

POST-DOCTORAL RESEARCHER SUPERVISION

1. Arman Afsari (S25–)
2. Ayush Bhatta (F24–)
3. Shahid Al Khan (F24–)
4. Jordan Besnoff (F2020, now research Prof NCSU 2021-)
5. Morteza Abbasi (2013-2016, research Prof. NCSU, 2016-18)
6. Jordan Besnoff (2014, now at Oakridge National Labs)
7. Junfeng Xu (2013, now at SpaceX)
8. Mathew Trotter (2013, Disney Research)
9. Mathew Chabalko (2012, now at Disney Research)
10. Darmin Arumugum (2012, now at JPL)
11. Limin Cao (2010,2012)
12. Joshua Smith (2010-2012, now at NRL)
13. Shingo Tamaru (2008-2010, now at AIST, Japan)

GRADUATE STUDENT SUPERVISION NCSU

1. Prya Darshni (PhD Canddiate, 2026)
2. Hongtao Zhong (PhD Candidate, 2025)
3. Shian Su (PhD Candidate, 2025)
4. Joe Zhou (PhD Candiate 2023)
5. Karan Maru F20-S21 RA
6. Sriraj Kandala, Summer 2020 RA
7. Bhaumik Jain Summer-Fall 2020 RA
8. Matt Dwyer Summer-Fall 2020. RA
9. William Harris (PhD candidate, 2019)
10. Junyu Shen (PhD candidate, 2019)
11. Hangjin Liu (PhD Candidate, 2021)
12. You Zhou (PhD Candidate, 2021)
13. Deeksha Lal (PhD 2018)
14. Samyak Parakh (MS, 2018)
15. Rafael de Silva (PhD candidate, 2020)
16. Michael Aiken (MS 2017, PhD Candidate)
17. Viswanath Ramesh (Initial PhD work 2015-2016)

GRADUATE STUDENT SUPERVISION CMU

1. Emre Karagozler, PhD 2013
2. Wei Tai, PhD 2012
3. Darmin Arumugam, PhD 2012
4. Weihua Hu, PhD 2012
5. Chongzhe Li, MS 2012
6. Zacherias George, MS 2012
7. En Shi, MS 2010
8. Qianyu Liu, MS 2009

GRADUATE COMMITTEES

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TSMC and Apple v. MYW Semitech - IPR2026-00066

1. Yongduk Oh (PhD Candidate 2023)
2. Jaewoo Kim (MS 2021)
3. Sarah Colebaugh
4. Weifu Li (PhD Candidate 2019)
5. Kirti Bhanushali (PhD candidate 2018)
6. Weihu Wang (PhD candidate 2018)
7. Yunjia Zhu (MS candidate Textiles 2017)
8. Junan Zhu (PhD candidate 2016)
9. Yunjia Zhu (MS candidate 2016)
10. Anirban Sarkar, (PhD candidate 2016)
11. Sandeep Hari, (PhD candidate 2018)
12. Kevin Green (PhD candidate 2016)
13. Ying Yi Tang, PhD 2015 (CMU)
14. Mohammad Noman, PhD 2013 (CMU)
15. Erkan Alpman, PhD 2007 (CMU)

UNDERGRADUATE STUDENT SUPERVISION

1. Bryan Wilson – S24
2. Jason Apsell F22-
3. Zander Selleseth F-22-
4. Jonathan Weeks – S32-
5. Yiyang Ye – S23/Summer
6. Maya Clinton F22-S23 (MechE)
7. Cole Contos F22
8. Jason Abell F22-S23
9. Landon Calton F22
10. Frank di Lustro S21
11. Alan Davila Summer 2020
12. Casey Crouse Spring 2020-Summer 2020
13. Jacob Abramow Spring 2020
14. Jeremy Peterson Sprinf 2020-Summer 2020
15. Laura Walker Spring 2020
16. Ryan Hardy REU Spring 2020-Spring 2021
17. Matt Dywer Connor Walker REU Fall/Spring 2019
18. Matt Dwyer REU 2019 Summer.
19. Casey Crouse REU 2019 Summer.
20. Zack Miller, Felix Chamielec, Danny Krafft, Grason Humphrey, Sufian Ahmad (NCSU UG Senior Design: Qi Charger, 2019)
21. Matt Dwyer, S19 (NCSU, Undergrad Research)
22. Shakti Reddy, F18/S19 (NCSU, Undergrad Research)
23. Shane Reagan, Zach Cline, Daniel Robson, Andrew Cragg, (NCSU UG Senior Design: Pringles Radar 2017/18)
24. Christian Burke, F17/S18 (NCSU, Undergrad Research)
25. Bill Zhou (BSEE) Fall 2016 (NCSU, Undergrad Research)
26. Akshay Iyer, Stephen Kerr, William Stepp, Kirk Weston, (NCSU UG Senior Design: Magnetic Sports Tracking, 2015/16)
27. Shaunak Turaga (BSEE), Fall/Spring 2014/15 (NCSU, Undergrad Research)
28. Mathew Briley (BSEE), Fall/Spring 2014/15 (NCSU, Undergrad Research)
29. Adeola Salu (BS), Spring 2013 (Harvard, Independent Study)

MYW Semitech Exhibit 2019
TSMC and Apple v. MYW Semitech - IPR2026-00066

30. Zackary Hamad (BS), Spring 2011 (Harvard, independent Study)
31. Andrew Hillenius (BS), Summer/Fall, 2011 (CMU, Independent Study)
32. Chongzhe Li (BS), Spring 2010 (CMU, Independent Study)
33. Christopher Heidelberger (BS), Summer 2009, (CMU) NSF REU
34. Yue Lu (BS), Summer 2007 (CMU Independent Study)

SPECIAL STUDENT ADVISING

1. Karan Maru, S20 (NCSU MSEE Research)
2. Bhaumik Jain, F19 (NCSU, MSEE Research)
3. Sriraj Kandala, F19 (NCSU, MSEE Research)
4. Sandesh Shanmukha, S19 (NCSU, MSEE Research)
5. Shubhankar Patwardham F17/S18/F18 (NCSU, Ind. Study)
6. Amrutha Anantha S18 (NCSU, Ind. Study)
7. David Philpott S2017 (NCSU, Ind. Study)
8. Shenoy Akshat S2017 (NCSU, Ind. Study)
9. Sayan Das Fall 2016 (NCSU, Ind. Study)
10. Rounak Lokare Spring 2016 (NCSU, Ind. Study)
11. Swaroop Mohapatra Spring 2016 (NCSU, Ind. Study)
12. Ganapati Pai Spring 2016 (NCSU, Ind. Study)
13. Mahmoud Metwally 2015 (NCSU, MS research)
14. Ashwin Thyagarajan Spring 2015 (NCSU Ind. Study)
15. Reza Chavoshisani 2015 (PhD – 1 year visiting scholar)
16. Abhishek Malhotra (MS), Spring/Summer, 2013 (NCSU, Independent Study)
17. Syed Saad (MS), Summer 2011 (CMU, Independent Study)
18. Brian Lee (MS), Summer 2011 (CMU, Independent Study)
19. Ashwath Krishnan (MS), Summer 2010 (CMU, Independent Study)
20. Akshat Gupta (MS), Fall 2009 (CMU, Independent Study)
21. Heer Ghandi (MS), Fall 2007 (CMU, Independent Study)

GRADUATE COMMITTEES:

Student name	**Degree [defense]**	**Chair**	**Member**	**Comment**
Zander Selleseth	PhD	X		
Brian Holdford	PhD	X		Qual F25

MYW Semitech Exhibit 2019
TSMC and Apple v. MYW Semitech - IPR2026-00066

II.D. MASTER'S AND DOCTORAL THESES DIRECTED AND BEING DIRECTED Show numbers and dates in each category

Master's and Doctoral Theses Currently under direction

Student name	Degree	Committee Approved	POW Approved	Qualifying Review (date)	Preliminary Exam (date)	Notes
Zander Selleseth	PhD					RA
Brian Holford	PhD			S26		RA

Doctoral Theses Directed

Student name	Degree [date]
Shian Su	S26
Hongtao Zhong	S25
Joe Zhou	May 2024
Carter Harris	May 2020
Junyu Shen	Aug 2019
Deeksha Lal	May 2019
Emre Karagozler	Jan 2013
Wei Tai	May 2012
Darmin Arumugam	Jan 2012
Weihua Hu	Aug 2012

Master's Directed

Student name	Degree [date]
Samyak Parakh	Dec. 2017
Fenglan Yang	May 2015
Chongzhe Li (CMU)	Dec. 2012
Zacherias George (CMU)	Aug 2005
En Shi (CMU)	May 2010
Qianyu Liu (CMU)	May 2009

MYW Semitech Exhibit 2019
TSMC and Apple v. MYW Semitech - IPR2026-00066

III. SCHOLARSHIP

III.A. PUBLICATIONS, AWARDS, AND ED. BOARD/PROGRAM COMMITTEE

List items as applicable, e.g., original research articles and research review articles in peer-reviewed journals, refereed articles that are pedagogy or extension-related, research abstracts, books; interdisciplinary/multidisciplinary works; invited and contributed research presentations; appointments or election to study sections and editorial boards; creative or professional works; exhibitions; juried shows, honors; awards, fellowships, prizes, competitions, and other pertinent evidence.

BOOKS

1. Radio System Design, D. S. Ricketts, Igram Spark, 2015.
2. Electrical Solitons: Theory, Design and Applications, D. S. Ricketts and D. Ham, CRC Press, 2010.
3. The Designers Guide to Jitter in Ring Oscillators, J. A. McNeill and D. S. Ricketts, Springer Verlag, 2009.

BOOK CHAPTERS

1. D. S. Ricketts, Xiaofeng Li, and Donhee Ham, "Soliton Electronics," in Circuits for Emerging Technologies - CMOS and Beyond, CRC Press 2008.
2. X. Li, D. S. Ricketts, and D. Ham, "Solitons in electrical networks," McGraw-Hill 2008 Yearbook of Science and Technology, McGraw-Hill, 2008.

DISCUSSION PI'S WORK

1. Nature, News & Views article by Thomas H. Lee, "Electrical solitons come of age," Nature, vol. 440, 36-37, Mar. 2006.

JOURNAL PUBLICATIONS
Graduate student author; undergraduate author

1. J. Besnoff et al., "Sweat-Powered, mm-Scale, Continuous-Time Sensor Systems With Bluetooth Low Energy (BLE) Backscatter," in IEEE Access, vol. 12, pp. 190092-190101, 2024, doi: 10.1109/ACCESS.2024.3515859.
2. W. C. Harris and D. S. Ricketts, "Maximum Gain Enhancement n Wireless Power Transfer using Anisotropic Metamaterials," Scientific Reports, Sci Rep 13, 7726 (2023). https://doi.org/10.1038/s41598-023-32415-9
3. J. Shen and D. S. Ricketts, "Compact W-Band "Swan Neck" Turnstile Junction Orthomode Transducer Implemented by 3-D Printing," in IEEE Transactions on Microwave Theory and Techniques, vol. 68, no. 8, pp. 3408-3417, Aug. 2020
4. **M. Dwyer** and D. S. Ricketts, "The North Carolina state university rabbit radar: Build a frequency-modulated continuous-wave radar in a day [application notes]," IEEE Microwave Magazine, vol. 21, no. 5, pp. 136–145, 2020..[**Invited]**
5. D. S. Ricketts, "A modern 16-qam digital radio you can design and build at home [application notes]," IEEE Microwave Magazine, vol. 21, no. 7,pp. 10–22, 2020.
6. **W. C. Harris**, D. D. Stancil, and David S. Ricketts, "Improved wireless power transfer efficiency with non-perfect lenses," Applied Physics Letters 114:14, April 2019.
7. D. S. Ricketts, E. Shi, X. Li, N. Sun, O.O.. Yildrim and D. Ham, "Electrical Solitons for Microwave Systems," IEEE Microwave Magazine, April 2019 [**Invited]**.
8. **J. Shen** and D. S. Ricketts, "Additive Manufacturing of Complex Millimeter-Wave Waveguides Structures Using Digital Light Processing," in IEEE Transactions on Microwave Theory and Techniques, vol. 67, no. 3, pp. 883-895, March 2019.

MYW Semitech Exhibit 2019
TSMC and Apple v. MYW Semitech - IPR2026-00066

9. D. S. Ricketts, **J. Shen**, J. Dunn, “Expanding the Antenna Frontier With Antenna Synthesis and 3D Printing”, (Cover article), Microwave Engineering Europe, Sept. 2018.
10. **D. Lal**, A. M. A. Ali and D. S. Ricketts, "Analysis and Comparison of High-Resolution GS/s Samplers in Advanced BiCMOS and CMOS," in IEEE Transactions on Circuits and Systems II: Express Briefs, vol. 65, no. 5, pp. 532-536, May 2018.
11. J. Besnoff, M. Abbasi and D. S. Ricketts, "Ultrahigh-Data-Rate Communication and Efficient Wireless Power Transfer at 13.56 MHz," in IEEE Antennas and Wireless Propagation Letters, vol. 16, pp. 2634-2637, 2017.
12. M. Abbasi, B. Wang, S. Tamaru, H. Kubota, A. Fukushima and D. S. Ricketts, "Accurate De-Embedding and Measurement of Spin-Torque Oscillators," in IEEE Transactions on Magnetics, vol. 53, no. 11, pp. 1-4, Nov. 2017.
13. **V. Pasku** et al., "Magnetic Field-Based Positioning Systems," in IEEE Communications Surveys & Tutorials, vol. 19, no. 3, pp. 2003-2017, thirdquarter 2017.
14. W. Tai, M. Abbasi and D. S. Ricketts, “Analysis and design of high-power and efficient, millimeter-wave power amplifier systems using zero degree combiners,” IET J. of Electronics, pp. 1-11, Jul. 2017.
15. M. Chabalko, J. Besnoff, M. Laifenfeld and D. S. Ricketts, "Resonantly Coupled Wireless Power Transfer for Non-Stationary Loads With Application in Automotive Environments," in IEEE Transactions on Industrial Electronics, vol. 64, no. 1, pp. 91-103, Jan. 2017.
16. Abbasi M, Ricketts DS. A high-power, broadband 245-285 GHz balanced frequency doubler in 45 nm SOI CMOS Microwave and Optical Technology Letters. 58: 423-426, 2016.
17. **M. E. Karagozler**, S. C. Goldstein and D. S. Ricketts, "Scalable self-assembly process for the fabrication of sub-millimetre three-dimensional cylindrical tubes," in IET Micro & Nano Letters, vol. 11, no. 1, pp. 4-8, 1 2016.
18. M.Abbasi, D.S.Ricketts, “A 275 GHz-285 GHz Balanced Frequency Quadrupler in 45nm SOI CMOS,” Electronic Letters, vol.51, no.18, pp.1424-1426, Sept 2015.
19. J. Besnoff, M. Abbasi and D. S. Ricketts, "High Data-Rate Communication in Near-Field RFID and Wireless Power Using Higher Order Modulation," in IEEE Transactions on Microwave Theory and Techniques, vol. 64, no. 2, pp. 401-413, Feb. 2016.
20. J. Besnoff, M. Chabalko and D. S. Ricketts, "A Frequency-Selective Zero-Permeability Metamaterial Shield for Reduction of Near-Field Electromagnetic Energy," in IEEE Antennas and Wireless Propagation Letters, vol. 15, pp. 654-657, 2016.
21. M. J. Chabalko, J. Besnoff and D. S. Ricketts, "Magnetic Field Enhancement in Wireless Power With Metamaterials and Magnetic Resonant Couplers," in IEEE Antennas and Wireless Propagation Letters, vol. 15, pp. 452-455, 2016.
22. M. Chabalko and D. S. Ricketts, “Experimental characterization of Fabry-Perot resonances of magnetostatic volume waves in near-field metamaterials”, Applied Physics Letters, 106, 062401 (2015).
23. **Ozcan, O.; Weihua Hu**; Sitti, M.; Bain, J.; Ricketts, D.S., "Investigation of tip current and normal force measured simultaneously during local oxidation of titanium using dual-mode scanning probe microscopy," Micro & Nano Letters, IET , vol.9, no.5, pp.332,336, May 2014
24. Ricketts, D.S.; Chabalko, M.; **Hillenius, A**., "Tri-Loop Impedance and Frequency Matching With High- Q Resonators in Wireless Power Transfer,"Antennas and Wireless Propagation Letters, IEEE , vol.13, no., pp.341,344, Jan. 2014.
25. **D. Arumugam**, J. Griffin, D. Stancil and D. S. Ricketts, “Three-Dimensional Position and Orientation Measurements using Magnetoquasistatic Fields and Complex Image Theory,” Antennas and Propagation Magazine, IEEE, vol.56, no.1, pp.160,173, Feb. 2014
26. Williams, D.F.; Corson, P.; Sharma, J.; Krishnaswamy, H.; **Tai, W**.; George, Z.; Ricketts, D.S.; Watson, P.M.; Dacquay, E.; Voinigescu, S.P., "Calibrations for Millimeter-Wave Silicon Transistor Characterization," Microwave Theory and Techniques, IEEE Transactions on , vol.62, no.3, pp.658,668, Mar. 2014.
27. **Tai, W**.; Ricketts, D.S., "A compact, 36 to 72 GHz 15.8 dBm power amplifier with 66.7% fractional bandwidth in 45 nm SOI CMOS," Microw. And Opt. Tech Lett. ,vol. 56, pp.1098-2760, Nov. 2013.
28. J. Xu and D. S. Ricketts, "An Efficient, Watt-Level Microwave Rectifier Using an Impedance Compression Network (ICN) With Applications in Outphasing Energy Recovery Systems," Microwave and Wireless Components Letters, IEEE , vol.23, no.10, pp.542,544, Oct. 2013.
29. Arumugam, D.D.; Ricketts, D.S., "Passive orientation measurement using magnetoquasistatic fields and coupled magnetic resonances," Electronics Letters , vol.49, no.16, pp.999,1001, Aug. 2013.

MYW Semitech Exhibit 2019
TSMC and Apple v. MYW Semitech - IPR2026-00066

30. Williams, D.F.; Corson, P.; Sharma, J.; Krishnaswamy, H.; **Wei Tai**; George, Z.; Ricketts, D.; Watson, P.; Dacquay, E.; Voinigescu, S.P., "Calibration-Kit Design for Millimeter-Wave Silicon Integrated Circuits," Microwave Theory and Techniques, IEEE Transactions on , vol.61, no.7, pp.2685,2694, July 2013.
31. **Tai, W**.; Ricketts, D.S., "74 GHz, 17.2 dBm power amplifier in 45 nm SOI CMOS," Electronics Letters ,vol.49,no.12,pp.758,759, June 2013.
32. S. Tamaru and D. S. Ricketts, "Measurement of ultra-low power oscillators using adaptive drift cancellation with applications to nano-magnetic spin torque oscillators," Rev. of Scien. Instr., vol. 84, p. 054704-7, May 2013.
33. **Arumugam, D.D.;** Ricketts, D.S., "Passive Magnetoquasistatic Position Measurement Using Coupled Magnetic Resonances," Antennas and Wireless Propagation Letters, IEEE , vol.12, no., pp.539,542, Apr. 2013
34. **Arumugam, D.D.**; Griffin, J.D.; Stancil, D.D.; Ricketts, D.S., "Magneto-Quasistatic Tracking of an American Football: A Goal-Line Measurement," Antennas and Propagation Magazine, IEEE , vol.55, no.1, pp.138,146, Feb. 2013.
35. D. S. Ricketts, M. Chabalko and **A. Hillenius**, "Experimental demonstration of the equivalence of inductive and strongly coupled magnetic resonance wireless power transfer," Applied Physics Letters, vol. 102, no. 5, Feb. 2013.
36. **C. Li** and D. S. Ricketts, "Loss minimization in λ/4 impedance transformers using multiple λ/4 segments," Electronic Letters, vol.49, no.4, pp.274,276, Feb. 14 2013
37. **W. Hu**, J. Bain and D. S. Ricketts, "An AFM/STM multi-mode nanofabrication approach allowing in situ surface modification and characterization," Micro and Nano Letters, Vol. 8, p. 43-46, Jan 2013.
38. **Arumugam**, J. Griffin, D. Stancil and D. S. Ricketts, "Error Reduction in Magnetoquasistatic Positioning Using Orthogonal Emitter Measurements," Antennas and Wireless Propagation Letters, IEEE, vol.11, no., pp.1462,1465, 2012
39. **R. Birt**, K. An, M. Tsoi, S. Tamaru, D. Ricketts, K. L. Wong, P. K. Amiri, K. L. Wang, and X. Li, "Deviation from exponential decay for spin waves excited with a coplanar waveguide antenna," Applied Physics Letters., vol. 101, no. 25, 2012.
40. S. Tamaru and D. S. Ricketts, "Experimental Study of the Variation in Oscillation Characteristics of Point-Contact-Based Spin-Torque Oscillators." IEEE Trans. on Magnetics, vol.3, no., pp.3000504, 2012
41. **M. E. Korogozlar**, S. Goldstein and D. S. Ricketts, "Analysis and modeling of capacitive power transfer in microsystems," Circuits and Systems I: Regular Papers, IEEE Transactions on , vol.59, no.7, pp.1557,1566, July 2012
42. **W. Hu**, J. A. Bain and D. S. Ricketts "In-Situ quantification of electrical isolation in STM-fabricated TiOx nanostructures," Micro and Nano Letters, vol. 7, no. 4, pp. 334-36, Apr. 2012.
43. S. Tamaru, J. A. Bain, M. H. Kryder and D. S. Ricketts, "Theory for calculating the Green's function of magnetostatic surface waves and its application to the study of spatial diffraction patterns," Physical Rev. B¸ 84, pp.064437 (2011).
44. D.S. Ricketts, J. A. Bain, Y. Luo, S. Blanton, K. Mai and G. K. Fedder, "Enhancing CMOS using nanoelectronic devices, a perspective on hybrid integrated systems," Proc. of the IEEE vol.98, no.12, pp.2061,2075, Dec. 2010.
45. **R. Evarts**, L. Cao, D. S. Ricketts, N. D. Rizzo, J. A. Bain, and S. A. Majetich, "Characterization of conducting atomic force micrsocopy for use with magnetic tunnel junctions," IEEE Trans. on Magnetics, vol.46, no.6, pp.1741,1744, June 2010
46. **E.R. Evarts**, L. Cao, D. S. Ricketts, N. D. Rizzo, J. A. Bain, and S. A. Majetich, "Spin transfer torque switching of magnetic tunnel junctions using a conductive atomic force microscope," Applied Physics Letters 95, 132510 (2009).
47. **O. O. Yildirim**, D. S. Ricketts, and D. Ham, "Reflection soliton oscillator," IEEE Transactions on Microwave Theory and Technique , vol. 57, no. 10, pp. 2344-2353, Oct. 2009.
48. D. S. Ricketts, X. Li, N. Sun, K. Woo, and D. Ham, "On the self-generation of electrical soliton pulses," IEEE J. Solid-State Circuits (JSSC), vol. 42, no. 8, pp. 1657-1668, Aug. 2007.
49. D. Ham, X. Li, S. A. Denenberg, T. H. Lee, and D. S. Ricketts, "Ordered and chaotic electrical solitons: communication perspectives," (**Invited**) IEEE Communications Magazine, vol. 44, no. 12, pp. 126-135, December 2006.
50. D. S. Ricketts, X. Li, and D. Ham, "Electrical Soliton Modelocking," (**Invited** cover article) IEEE LEOS Newsletter, vol. 20, no. 3, pp. 4-11, June 2006.
51. D. S. Ricketts, X. Li, and D. Ham, "Electrical Soliton Oscillator," IEEE Trans. on Microwave Theory and Tech., vol. 54, no. 1, pp. 373-382, Jan. 2006.

MYW Semitech Exhibit 2019
TSMC and Apple v. MYW Semitech - IPR2026-00066

52. R. S. Friedman, M. C. McAlpine, D. S. Ricketts, D. Ham, C. M. Lieber, "High-speed integrated nanowire circuits," Nature, vol. 434, p.1085, Apr. 2005.

PEER-REVIEWED CONFERENCE/WORKSHOP PUBLICATIONS
Graduate student author; undergraduate author

1. H. Zhong, S. Su and D. S. Ricketts, "A Two-Dimensional Active Magnetic Metamaterial Cell," *2025 55th European Microwave Conference (EuMC)*, Utrecht, Netherlands, 2025, pp. 1044-1047, doi: 10.23919/EuMC65286.2025.11235237.
2. Kolli, Nithin et al. (Ricketts) "RF Integrated Gate Driver for Ultra-fast Switching of 10 kV SiC MOSFETs." *2025 IEEE Energy Conversion Conference Congress and Exposition (ECCE)* (2025): 1-7.
3. Su, Shian, Hongtao Zhong and David S. Ricketts. "Active Metamaterial Mini-Array Using Inter-Cell Stability Compensation." *2025 55th European Microwave Conference (EuMC) (2025*): 1048-1051.
4. H. Zhong and D. S. Ricketts, "14dB Active Gain Magnetic Negative Permeability Metamaterial Cell with Self-coupling Compensation," 2023 53rd European Microwave Conference (EuMC), Berlin, Germany, 2023, pp. 424-427, doi: 10.23919/EuMC58039.2023.10290148.
5. G. Garner, B. Byars, J. Wetherington, J. Besnoff and D. S. Ricketts, "Radio Disruption of Electronic Systems," GOMACTech, Charleston SC 2024
6. H. Zhong and D. S. Ricketts, "14dB Active Gain Magnetic Negative Permeability Metamaterial Cell with Self-coupling Compensation," 2023 53rd European Microwave Conference (EuMC), Berlin, Germany, 2023, pp. 424-427, doi: 10.23919/EuMC58039.2023.10290148.
7. J. Besnoff and D. S. Ricketts, "Teaching 100 remote students hands-on microwave design: Building a 16 QAM radio at home by hand," 2021 51st European Microwave Conference (EuMC), London, United Kingdom, 2022, pp. 1-4
8. J. Shen and D. S. Ricketts, "Advances in 3D additive manufacturing for complex mm-wave components and sub-systems." IEEE Radio Wireless Week, Jan 2020. **Invited**.
9. **M. Aiken** and D. S. Ricketts, "Simple Laminated PCB Artificial Dielectrics for mm-Wave Quasioptical Lenses," 2019 49th European Microwave Conference (EuMC), Paris, 2019.
10. J. Besnoff, Y. Buchbut, K. Scheim and D. S. Ricketts, "A 50% Fractional Bandwidth, Wireless Power Communication System Achieving 6.78 Mbps at 13.56 MHz Carrier," 2018 48th European Microwave Conference (EuMC), Madrid, 2018, pp. 178-181.
11. J. Besnoff, Y. Buchbut, K. Scheim and D. S. Ricketts, "Dynamic Impedance Matching of Multiple Loads in Wireless Power Transfer using a Genetic Optimization Approach," 2018 IEEE/MTT-S International Microwave Symposium - IMS, Philadelphia, PA, 2018, pp. 1272-1274.
12. **J. Shen, D. P. Parekh**, M. D. Dickey and D. S. Ricketts, "3D Printed Coaxial Transmission Line Using Low Loss Dielectric and Liquid Metal Conductor," 2018 IEEE/MTT-S International Microwave Symposium - IMS, Philadelphia, PA, 2018, pp. 59-62.
13. **J. Shen**, M. Abbasi, and David S. Ricketts," 3D Printed Antennas: Enabling Complex Antenna Structures," USNC-URSI, Jan 2018.
14. J. Besnoff, D. S. Ricketts, Y. Buchbut, G. Castillo, M. Laifendfeld and K. Scheim, "Smart wireless power: A wireless power and bi-directional LIN communication system," 2017 IEEE International Conference on Microwaves, Antennas, Communications and Electronic Systems (COMCAS), Tel-Aviv, 2017, pp. 1-3.
15. **J. Shen, M. Aiken**, M. Abbasi, **D. P. Parekh, X. Zhao**, M. D. Dickey, David S. Ricketts ,"Rapid prototyping of low loss 3D printed waveguides for millimeter-wave applications," 2017 IEEE MTT-S International Microwave Symposium (IMS), Honololu, HI, 2017, pp. 41-44.
16. D. S. Ricketts, "Analog limitations for high-speed digital radios: Where the bits stop working," 2017 IEEE 60th International Midwest Symposium on Circuits and Systems (MWSCAS), Boston, MA, 2017, pp. 37-40. (**Invited**)
17. M. Abbasi, B. Wang, S. Tamaru, H. Kubota, A. Fukushima and D. Ricketts, "Precision power measurement of spin-torque nano-oscillators using an accurate de-embedding structure and analysis," 2017 IEEE International Magnetics Conference (INTERMAG), Dublin, 2017, pp. 1-1.
18. D. Ricketts and M. Abbasi, "Analytical limits to maximum RF performance of spin torque nano-oscillators," 2017 IEEE International Magnetics Conference (INTERMAG), Dublin, 2017, pp. 1-1.
19. **J. Shen, M. Aiken**, C. Ladd, M. Dickey and D. S. Ricketts, "A Simple Electroless Plating Solution for 3D Printed Microwave Components," *IEEE Asia Pacific Microw.Conf.*, Dec 2016. (**Best paper award)**

MYW Semitech Exhibit 2019
TSMC and Apple v. MYW Semitech - IPR2026-00066

20. **W. Harris**, T. Nichols, M. Abbasi and D. S. Ricketts, "A Simple Electroless Plating Solution for 3D Printed Microwave Components A Versatile mm-Wave Micromachined Anti-Reflective Layer," *IEEE Asia Pacific Microw.Conf.*, Dec 2016.
21. M. Abbasi and D. S. Ricketts, "W-Band Conical and Corrugated Horn Antennas Using Stereolithography 3D-Printing Technology," *IEEE Asia Pacific Microw.Conf.*, Dec 2016.
22. M. Abbasi and D. S. Ricketts, "mm-Wave and THz Multipliers: Advances and Opportunities," *IEEE Asia Pacific Microw.Conf.*, Dec 2016. **(Invited)**
23. **D. Lal**, M. Abbasi and D. S. Ricketts, "A broadband, compact 140–170GHz double side-band receiver in 90nm SiGe technology," 2016 46th European Microwave Conference (EuMC), London, 2016, pp. 687-690.
24. **Lal, D**.; Abbasi, M. and D. S. Ricketts, "A Compact, High Linearity 40GS/s Track-and-Hold Amplifier in 90nm SiGe Technology," IEEE Custom Integrated Circuits Conf., Sept. 2015.
25. Besnoff, J. and D. S. Ricketts, "Wide bandwidth for high-speed communication in mid-range, resonant WPT and RFID systems," Microwave Conference (EuMC), 2015 European.
26. Besnoff, J.; Ricketts, D.S., "Near field wireless power transfer and quadrature amplitude modulated (QAM) communication link," in Wireless Power Transfer Conference (WPTC), 2015 IEEE , vol., no., pp.1-4, 13-15 May 2015.
27. Besnoff, J.; Ricketts, D., "Quadrature amplitude modulated (QAM) communication link for near and mid-range RFID systems," in RFID (RFID), 2015 IEEE International Conference on , vol., no., pp.151-157, 15-17 April 2015.
28. **Wei Tai**; Ricketts, D.S., " A Compact, High-gain Q-Band Stacked Power Amplifier in 45nm SOI CMOS With 19.2dBm Psat and 19% PAE, IEEE PAWR Conference, Jan 2015," IEEE PAWR Conference, Jan 2015.
29. M. J. Chabalko, **W. C. Harris**, D. D. Stancil and D. S. Ricketts, "Experimental Characterization of Volume-mode Waves in Near-field Anisotropic Metamaterials with Application to Wireless Power Transfer," Asia-Pacific Microwave Conference, Nov 2014.
30. Junfeng Xu; Ricketts, D.S., "Broadband W-band On-Chip Yagi Antenna Using Superstrate for High Efficiency and Endfire Radiation" Asia Pacific Microwave Conference, Nov. 2014
31. Chabalko, M.J.; Laifenfeld, M.; Buchbut, Y.; Ricketts, D.S., "Resonantly-coupled wireless powered seat locomotion in automotive applications," European Microwave Conference (EuMC), 2014 44th , vol., no., pp.421,424, 6-9 Oct. 2014.
32. Chabalko, M.J.; Ricketts, D.S., "The effects of magneto-static resonances in metamaterials on the quality factor of coils in near field applications," Antennas and Propagation Society International Symposium (APSURSI), 2014 IEEE , vol., no., pp.426,427, 6-11 July 2014.
33. Chabalko, M.; Alarcon, E.; **Bou, E**.; Ricketts, D.S., "Optimization of WPT efficiency using a conjugate load in non-impedance matched systems.," Antennas and Propagation Society International Symposium (APSURSI), 2014 IEEE , vol., no., pp.645,646, 6-11 July 2014
34. Chabalko, M.J.; Ricketts, D.S., "Low-frequency metamaterial permeability retrieval for near-field applications," Antennas and Propagation Society International Symposium (APSURSI), 2014 IEEE , vol., no., pp.233,234, 6-11 July 2014
35. **Wei Tai**; Ricketts, D.S., "A W-band 21.1 dBm power amplifier with an 8-way zero-degree combiner in 45 nm SOI CMOS," Microwave Symposium (IMS), 2014 IEEE MTT-S International , vol., no., pp.1,3, 1-6 June 2014
36. **Wei Tai**; Ricketts, D.S.,"Watt-Level, All-Silicon mm-Wave Power Amplifiers Using Zero-Degree Combiners" GOMACTech (Government Microcircuit Applications and Critical Technology) Conference, April 2014
37. **Wei Tai**; Ricketts, D.S., "A Q-band power amplifier with high-gain pre-driver and 18.7 dBm output power for fully integrated CMOS transmitters," Power Amplifiers for Wireless and Radio Applications (PAWR), 2014 IEEE Topical Conference on , vol., no., pp.34,36, 19-23 Jan. 2014
38. **Chen, M.W**.; Carley, L.R.; Ricketts, D.S., "A process-technology-scaling-tolerant pipelined ADC architecture achieving 6-bit and 4 GS/s ADC in 45nm CMOS," Silicon Monolithic Integrated Circuits in Rf Systems (SiRF), 2014 IEEE 14th Topical Meeting on , vol., no., pp.16,18, 19-23 Jan. 2014
39. M. Trotter, J. D. Griffin, D. S. Ricketts, "Enhanced Accuracy for a Complex Image Theory Position Estimator using Frequency Diversity," Wireless Sensors and Sensor Networks, IEEE Topical meeting on, Feb. 2014.
40. Junfeng Xu; **Wei Tai**; Ricketts, D.S., "Microwave watt-level rectifiers for power recycling applications," Microwave Integrated Circuits Conference (EuMIC), 2013 European, pp.516,519, 6-8 Oct. 2013.
41. Ricketts, D.S.; Chabalko, M.J.; **Hillenius, A**., "Optimization of wireless power transfer for mobile receivers using automatic digital capacitance tuning," Microwave Conference (EuMC), 2013 European , vol., no., pp.515,518, 6-10 Oct. 2013.

MYW Semitech Exhibit 2019
TSMC and Apple v. MYW Semitech - IPR2026-00066

42. M. Chabalko and D. S. Ricketts, “The Effects of Magneto-static Surface Resonances in Metamaterials on the Quality Factor of Coils in Near Field Applications,” Antennas and Propagation Society International Symposium (APSURSI), July, 2014.
43. Trotter, M.S.; Ricketts, D.S.; Griffin, J.D., "Experimental demonstration of complex image theory for vertical magnetic dipoles with applications to remote sensing and position tracking," Electromagnetics in Advanced Applications (ICEAA), 2013 International Conference on , vol., no., pp.1248,1251, 9-13 Sept. 2013.
44. **O. Ozcan, W. Hu**, M. Sitti, J. A. Bain and D.S. Ricketts, “Experimental Investigation of Force, Conduction and Growth in Nano-oxidation using scanning probe microscopy,” Enabling Nanomanufacturing for Rapid Innovation, Aug. 2013. [Best Poster]
45. D. S. Ricketts and M. Chabalko, “Distributed Resonant Coil Systems for Efficient Wireless Power Transfer,” Progress in Electromagnetics Research Symposium (PIERS), Aug. 2013.
46. J. Xu and D. S. Ricketts, “A Transmission line based resistance compression network (TRCN) for microwave applications,” Microwave Symposium Digest (IMS), 2013 IEEE MTT-S International , vol., no., pp.1,3, 2-7 June 2013
47. D. S. Ricketts and M. Chabalko, “On the efficient wireless power transfer in resonant multi-receiver systems,” Circuits and Systems (ISCAS), 2013 IEEE International Symposium on , vol., no., pp.2779,2782, 19-23 May 2013
48. **Arumugam, D.D.; Sibley, M**.; Griffin, J.D.; Stancil, D.D.; Ricketts, D.S., "An active position sensing tag for sports visualization in American football," RFID (RFID), 2013 IEEE International Conference on , vol., no., pp.96,103, April 30 2013.
49. **W. Tai**, L. R. Carley and D. S. Ricketts, “A 0.7W Fully Integrated 42GHz Power Amplifier with 10% PAE in 130nm SiGe BiCMOS,” Solid-State Circuits Conference Digest of Technical Papers (ISSCC), 2013 IEEE International , vol., no., pp.142,143, 17-21 Feb. 2013
50. **M. W. Chen, D. Tian, S. Phatak**, L. R. Carley, D. S. Ricketts, “A 4GHz-Bandwidth Op-Amp Free Track-and-Hold and 6-bit Flash ADC in 45nm SOI CMOS” Silicon Monolithic Integrated Circuits in RF Systems (SiRF), 2013 IEEE 13th Topical Meeting on , vol., no., pp.126,128, 21-23 Jan. 2013
51. **D. Birt, K. An, M. Tsoi**, S. Tamaru, D. Ricketts, K.L. Wong, P.K. Amiri, K.L. Wang and X. Li,” Oscillatory Spatial Intensity Pattern for Spin Waves Excited with a Coplanar Waveguide Antenna,” Conference on Magnetism and Magnetic Materials, Chicago, IL, paper EC-02, Jan. 2013.
52. **C. Li** and D. S. Ricketts, “A low-loss, compact, $\lambda/4$ power combiner architecture,” Microwave Integrated Circuits Conference (EuMIC), 2012 7th European , vol., no., pp.147,150, 29-30 Oct. 2012
53. D. S. Ricketts and **A. Hillenius**, “Equivalence of inductive coupling and strongly coupled Magnetic resonance in wireless power transfer,” Progress in Electromagnetics Research Symposium (PIERS), Aug. 2012.
54. **D. Arumugam**, J. Griffin, D. Stancil and D. S. Ricketts, “Experimental study on the effects of groups of people on magnetoquasistatic positioning accuracy,” Antennas and Propagation Society International Symposium (APSURSI), 2012 IEEE , vol., no., pp.1,2, 8-14 July 2012
55. D. S. Ricketts, “A dispersion-tapered reflection soliton oscillator,” Microwave Symposium Digest (MTT), 2012 IEEE MTT-S International , vol., no., pp.1,3, 17-22 June 2012
56. **D. Tian**, L. R. Carley and D. S. Ricketts, “Frequency Scaling of Power Reclamation Networksin Outphasing PA Architectures,” Circuits and Systems (ISCAS), 2012 IEEE International Symposium on , vol., no., pp.1058,1061, 20-23 May 2012
57. S. Tamaru and D. S. Ricketts, “Origin of variation in the oscillation characteristics of point contact based spin torque oscillators,” Magnetics Letters, IEEE , vol.3, no., pp.3000504,3000504, 2012
58. **W. Hu** J. A. Bain and D. S. Ricketts, “In-situ characterization using AFM probes in multiple modes,” Int. Conf. Electron, Ion, Photon Beam Technology and Nanofabrication, May, 2012.
59. **Lee, B.J.; Hillenius, A**.; Ricketts, D.S., "Magnetic resonant wireless power delivery for distributed sensor and wireless systems," Wireless Sensors and Sensor Networks (WiSNet), 2012 IEEE Topical Conference on , vol., no., pp.13,16, 15-18 Jan. 2012.
60. **D. Arumugam**, J. Griffin, D. Stancil and D. S. Ricketts, “A wireless orientation sensor using magnetoquasistatic fields and complex image theory,” Radio and Wireless Symposium (RWS), 2012 IEEE , vol., no., pp.251,254, 15-18 Jan. 2012
61. **W. Tai**, L. R. Carley and D. S. Ricketts, “A Q-band SiGe Power Amplifier with 15.5 dBm Saturated Output Power and 26% Peak PAE,” Bipolar/BiCMOS Circuits and Technology Meeting (BCTM), 2011 IEEE , vol., no., pp.146,149, 9-11 Oct. 2011

MYW Semitech Exhibit 2019
TSMC and Apple v. MYW Semitech - IPR2026-00066

62. **D. Arumugam**, D. Stancil and D. S. Ricketts, "Proximity and Orientation Sensing Using Magnetoquasistatic Fields and Complex Image Theory" Vehicular Technology Conference (VTC Fall), 2011 IEEE , vol., no., pp.1,5, 5-8 Sept. 2011
63. **W. Hu**, J. Gu, **Z. George** and D. S. Ricketts, "Directed scanning probe nanomanufacturing of lateral Ti-TiO2-Ti junctions for low capacitance MIM rectenna diodes," Micro and Nano Engineering Conf., Berlin, Sept. 2011.
64. **D. Arumugam**, J. Griffin, D. Stancil and D. S. Ricketts, "2-Dimensional Position Measurement using Magnetoquasistatic Fields," Antennas and Propagation in Wireless Communications (APWC), 2011 IEEE-APS Topical Conference on , vol., no., pp.1193,1196, 12-16 Sept. 2011
65. **W. Hu, Y. Tang, Y.Zhang**, J. Gu, S. Tamaru, J. A. Bain, L. R. Carley, R. F. Davis, G. K. Fedder and D. S. Ricketts, "TI/TIO2 nanodevice fabrication using compliant probes and CMOS probe-arrays," Technologies for Future Micro-Nano Manufacturing, Napa Valley, CA, Aug. 2011.
66. **D. Arumugam**, J. Griffin, D. Stancil and D. S. Ricketts, "Higher Order Loop Corrections for Short Range Magnetoquasistatic Position Tracking," Antennas and Propagation (APSURSI), 2011 IEEE International Symposium on , vol., no., pp.1755,1757, 3-8 July 2011
67. **M. E. Karagozler, A. M. Thaker**, S. Goldstein and D. S. Ricketts, "Electrostatic-actuation generation and control of micro robots in a post-processed HV SOI CMOS," Circuits and Systems (ISCAS), 2011 IEEE International Symposium on , vol., no., pp.2509,2512, 15-18 May 2011
68. **W. Hu,** S. Tamaru, J. A. Bain and D. S. Ricketts, "High Current Pulse Generation for Thermal Surface Modification using Standard STM," Int. Conf. Electron, Ion, Photon Beam Technology and Nanofabrication, May. 2011.
69. J. R. Smith, D. S. Ricketts and J. A. Bain, "Localized thermal modification of surfaces via pulsed electron bombardment from an STM tip," Int. Conf. Electron, Ion, Photon Beam Technology and Nanofabrication, May. 2011.
70. **D. Arumugam**, J. Griffin, D. Stancil and D. S. Ricketts, "Long Range Magnetoquasistatic Position Tracking using a Simple Active RFID Tag," IEEE Int. Conf. RFID, Apr. 2011.
71. S. Tamaru and D. S. Ricketts, "Influence of the bias field orientation on the interaction strength between two closely formed spin torque oscillators," Int. Magnetics Conf., paper CO-05, Taiwan, Apr 2011.
72. **E.R. Evarts, R.A. Booth, L.R. Shah, Y. Tang**, S. Tamaru, D.S. Ricketts, J.A. Bain, S.A. Majetich,"Sub-30 nm Magnetic Tunnel Junction and Spin Valve Nanopillar Analysis Using Conductive Atomic Force Microscopy," Int. Magnetics Conf., paper BB-03, Taiwan, Apr 2011.
73. J. R. Smith, **W. Hu, Y-Y Dang, O. Ozcan**, M. Sitti, J. A. Bain, D. S. Ricketts, R. Davis, "Scanning Probe Nanomanufacturing on Si: Surface Characterization of the Process Technique," Materials Research Symposium, paper G1.5, Nov. 2010
74. **E. R. Evarts**, M. Moneck, R. A. Booth, C. Hogg, D. S. Ricketts, J-G Zhu, J.A. Bain, and S. A. Majetich, "Spin Torque Switching of 26 nm Diameter Magnetic Tunnel Junction Using a Conductive Atomic Force Microscope," Conference on Magnetism and Magnetic Materials, Atlanta, GA, paper FC-13, Nov. 2010.
75. **E. R. Evarts, T.T. Farkas, B. Tsukerman**, L. Cao, D. S. Ricketts, G. Markovich, J.A. Bain, and S.A. Majetich, "Noise Measurements on Magnetic Tunnel Junction Nanopillars using Conductive Atomic Force Microscopy," Conference on Magnetism and Magnetic Materials, Atlanta, GA, paper CB-10, Nov. 2010.
76. **M. W. Chen** and D. S. Ricketts, "An 8.6GHz 42ps Pulse-Width Electrical Mode-Locked Oscillator," International Solid-State Circuits Conference (ISSCC), pp. 500-501, Feb. 2010.
77. D. S. Ricketts, L. Cao and S. Tamaru, "Spin-torque oscillator arrays as a solution for line width reduction in RF applications", Conference on Magnetism and Magnetic Materials, paper EY-01, Washington D.C., Dec. 2009.
78. D. S. Ricketts, T. Schlesinger, Y. Luo and J. Bain, "Materials and Devices for Hybrid CMOS Circuits: Expanding the Functionality of Nanoscale CMOS," Nano-DDS Conference, Ft. Lauderdale, FL, Oct. 2009 (Invited).
79. D. S. Ricketts and S. Bruck, "Stochastic Logic", NRI-MIND, Architectures for post- CMOS switches (Invited), Notre Dame, IN, Oct. 2009.
80. D. S. Ricketts, X. Li and D. Ham, "Soliton Electronics," CMOS Emerging Technology Workshop, Whistler, Canada, 2007. (invited)
81. W. F. Andress, D. S. Ricketts, X. Li, and D. Ham, "Passive & active control of regenerative standing & soliton waves," (Invited) Proc. of the IEEE Custom Integrated Circuits Conference, pp. 29-36, Sept. 2006.
82. D. S. Ricketts, X. Li and D. Ham, "Taming the electrical soliton: A new direction in picosecond electronics," Radio Frequency Integrated Circuits (RFIC) Symposium, 2006 IEEE , vol., no., pp.4 pp.,24, 11-13 June 2006
83. D. S. Ricketts and D. Ham, "A chip-scale electrical soliton modelocked oscillator," IEEE International Solid-State Circuits Conference (ISSCC), pp. 432-433, Feb 2006.

MYW Semitech Exhibit 2019
TSMC and Apple v. MYW Semitech - IPR2026-00066

84. D. S. Ricketts, X. Li, M. DePetro, and D. Ham, "A self-sustained electrical soliton oscillator," Microwave Symposium Digest, 2005 IEEE MTT-S International , vol., no., pp.4 pp.,, 12-17 June 2005
85. D. Ham, W. Andress, and D. S. Ricketts, "Phase noise in oscillators," (Invited) Int. Workshop on Sip/SoC Integration of MEMS and Passive Components with RF-ICs, March 2004.

INVITED CONFERENCE PRESENTATIONS (WITHOUT PAPERS)
Graduate student author; undergraduate author

1. D. S. Ricketts, W. Harris, J. Zhu, D. Baron, "Dynamic artificial surfaces for mm-wave imaging using photon induced plasmas in silicon lenses." DMI Online Workshop on Energy/Quantum/Metamaterials, Dec, 2020.
2. D. S. Ricketts, "Lessons from Build-a-Radio/Radar in a Day: The Ins and Outs of Experiential Design for Students," European Microwave Week, Teaching Microwave Engineering Special Session, Sept 2020.
3. M. Abbasi and D. S. Ricketts, "100 Gb/s All-electronic Radios: Opportunities and Challenges", GomacTech, Mar. 2014
4. **W. Tai, C. Li, Z. Li, G. Yahalom,** D.S. Ricketts, V. Stojanovic and J. Dawson, "A 45 GHz Asymmetric Multilevel Outphasing Transmitter in 45nm SOI CMOS," Student Research Int. Solid-State Circuits Conf, IEEE, Feb. 2012.
5. J.R. Smith, **W. Hu, Y.Y. Dang, O. Ozcan**, M. Sitti, J. Bain, R. Davis and D. S. Ricketts, "Writing Si nanowires on Si (100) with an STM tip: surface preparation and initial results," Materials Research Symposium, M11.50, Boston, MA, Nov. 2009
6. R. S. Friedman, M. C. McAlpine, D. S. Ricketts, D. Ham, C. M. Lieber, "Fully integrated high frequency nanowire ring oscillators," Materials Research Symposium, Mar. 2005.
7. D. S. Ricketts, "Current sensing and accuracy for CPU multi-phase DC-DC converters: the sub 20 mV challenge," IBM Power Delivery Symposium, 2002.

ACADEMIC WORKSHOPS and SHORT COURSES (Chair or Co-Chair)

1. RF and Electronic Warfare Workshop with NSA. Dec. 2023.
2. "Build a Foxhole Radio" International Microwave Symposium, San Diego, CA June, 2023
3. RF Engineering workshop, US Navay Academy, May 2023
4. RF Bootcamp in residence course, delivered at UT Dallas in collaboration with Texas Analog Center of Excellence. May 2023.
5. 12th Tom Brazil Doctoral School of microwaves "Build a Frequency Modulated Continuous Wave Radar in 1-day" IEEE European Microwave Week, Milan, Italy, Sept 2022.
6. 11th Tom Brazil Doctoral School of microwaves "Build a modern digital radio" IEEE European Microwave Week, London, UK, June 2021.
7. "Build a NIST Atomic Clock Radio" International Microwave Symposium, Denver, Co June, 2022.
8. 5th European Micwoave Student and Doctoral School: "Build a Frequency Modulated Continuous Wave Radar in 1-day" IEEE European Microwave Week, Utrecht, NL 2020 (virtual).
9. Frequency-Modulated Continuous Wave Radar in 1-day", European Microwave, Utrecht, NL, 2020.
10. "4th European Microwave Student and Doctoral Schools: Build a modern digital radio," IEEE ," IEEE European Microwave Week, Paris, France, Oct 2019.
11. "Build a 950 MHz radar in a day," IEEE Int. Microwave Symposium, Boston, MA, June 2019.
12. "Design, Fab and Test Your Own Microwave Component," Industry Workshop, IEEE Int. Microwave Symposium, Boston, MA, June 2019..
13. "From Bits to Waves: Building a Modern Digital Radio in 1 Day – Hand-on Workshop," IEEE Asia Pacific Microwave Conference, Kyoto, Japan, 2018.
14. "4th European Microwave Student and Doctoral Schools: Build a modern digital radio," IEEE ," IEEE European Microwave Week, Madrid, Spain, Sep 2017.
15. "Build a 16 QAM Radio – Student Design Competition," IEEE Int. Microwave Symposium, Philadelphia, PA, June 2018.
16. "Design, Fab and Test Your Own Microwave Component," Industry Workshop, IEEE Int. Microwave Symposium, Philadelphia, PA, June 2018.
17. "3rd European Microwave Student and Doctoral Schools: Build a modern digital radio," IEEE ," IEEE European Microwave Week, Nuremberg, Germany, Oct 2017.

MYW Semitech Exhibit 2019
TSMC and Apple v. MYW Semitech - IPR2026-00066

18. "Build a Modern Digital Radio in a day," Int. Microwave Symposium, Honolulu, HI, June 2017.
19. "From Bits to Waves: Building a Modern Digital Radio in 1 Day – Hand-on Workshop," IEEE Asia Pacific Microwave Conference, New Delhi, India, Nov 2016.
20. "From Bits to Waves: Building a Modern Digital Radio in 1 Day – Hand-on Workshop," IEEE European Microwave Week, London, UK, Oct 2016.
21. "From Bits to Waves: Building a Modern Digital Radio in 1 Day – Hand-on Workshop," EDICON, Boston, MA, Sep. 2016.
22. "Emerging devices for Microwave Circuits and Systems," IEEE Int. Microwave Symposium, San Francisco CA,, May 2016.
23. "Build a Modern Digital Radio in a day," IEEE Int. Microwave Symposium, San Francisco, CA, May 2016.
24. "Build a Modern Digital Radio in a day," IEEE Radio Wireless Week, Austin, Texas, Jan, 2016.

INVITED RESEARCH PRESENTATIONS, Universities and Industry

1. "From one to one million Volts," ECE Colloquim, NCSU Apr. 2024
2. "Live from Faraday's Lab": An Intuitive and Historical Perspective on Electromagnetism" IEEE MTT Webinar, May 2022.
3. "NCSU Rabbit Radar: Design, Simulation & Building your own Frequency Modulated Continuous Wave Radar at Home," IEEE MTT-S Virtual Lecture, Sept, 2020
4. "From Bits to Waves - Building a Modern Digital Radio," Cadence Live, August 2020.
5. "Data, Sensors and New Technologies for Smart Cities," RMIT, Melbourne Australia, Mar 2019.
6. "New Approaches to IoT in Smart Cities," Western Sydney University, Sydney, Australia, Mar 2019.
7. "Enhancing, Shaping and Steering WPT Fields," WPT NSF ERC Industry Workshop, Alexandria, VA, Dec 2018.
8. "High-speed GaN RF DC-DC Converter design," Power America Webinar, NCSU, Oct. 2018.
9. "High-speed Communication & Field Enhancement Using Artificial Materials," Pennsylvania State University, Oct 2018.
10. "Modern Digital Radios," EuMW Microapp Lecture, Madrid Sept. 2018.
11. "Sensors and Networks for Smart Cities," City of San Diego, CA, Apr 2018.
12. "Emerging Technologies in Sensors for Smart Cities," Facebook, Dublin, Feb 2018.
13. "Science in Microwaves," NSF Workshop at IMS2017, June 2017.
14. "Magic with Magnetic Fields: NFL Football Tracking", Raleigh Engineers Club, Raleigh, NC, June 2017.
15. "Maximum power and phase noise in spin-torque oscillators," AIST Dec 2016.
16. "High-power, broadband multipliers for high-speed microscale radios," IEEE IMS invited workshop presentation, May 2016.
17. "Advances in wireless power transfer research: challenges and opportunities," General Motors, Feb. 2016.
18. "Magic with magnetic fields: NFL football tracking and advances in wireless power transfer & communication," Univ. of Washington, Feb, 2015.
19. "State of the art and future of high-speed wireless transceivers: Opportunities and challenges for near-THz communication," CMOS Emerging Technologies Conference, **Plenary, Invited**, May 2015.
20. "Advances in wireless power transfer research from academia: Challenges and opportunities," Wireless Power Summit, **Invited**, Berkeley, CA, Nov 2014.
21. "Advances in high-speed integrated and nanoelectronics," AIST Nov 2014.
22. "Watt-level, Highly Efficient, Fully Integrated all-Silicon Linear Power Amplification for mm-Wave Radar and Communications," Berkeley Nov. 2014.
23. "High-speed integrated circuits: From water waves to optical sampling," Analog Devices, Oct 2014.
24. "Advanced RF substrates: Applications in mm-wave electronics," DuPont 2014.
25. "Advanced mm-wave Circuits and Systems," Nuvotronics, 2014.
26. "Watt-level, Highly Efficient, Fully Integrated all-Silicon Linear Power Amplification for mm-Wave Radar and Communications," University of Delft, Netherlands, 2014
27. "Watt-level, Highly Efficient, Fully Integrated all-Silicon Linear Power Amplification for mm-Wave Radar and Communications," University of Pavia, Italy, 2014
28. "Magnetoquasistatics: Emerging Applications in Sports Visualization and Enhanced Wireless Power Transfer," University of Perugia, Italy, 2014

MYW Semitech Exhibit 2019
TSMC and Apple v. MYW Semitech - IPR2026-00066

29. "Power, Sensing and Communication: Opportunities for a wireless world," General Motors Research, Herzlia Israel, Oct. 2013.
30. "Enabling Rapid Innovation in Nanomanufacturing," ENRI NSF workshop keynote, Napa, CA. Aug. 2013.
31. "Watt-level, Highly Efficient, Fully Integrated Linear Power Amplification for mm-Wave Radar and Communications," MIT, Boston Ma, May 2013.
32. "Watt-level, Highly Efficient, Fully Integrated Linear Power Amplification for mm-Wave Radar and Communications," Qualcomm, San Diego, CA, Jan 2013.
33. "Impedance Matched Magnetoquasistatic Wireless Power: On the equivalence of inductive and strongly coupled magnetic resonance and the challenges of multiple and mobile receivers" Qualcomm, San Diego, CA, Jan 2013.
34. RF from Kilometer to Millimeter Waves: NFL Football Tracking and High-power mm-Wave Circuits and Systems," POSTECH, Korea Aug 2012 (Distinguished Lecturer)
35. "Watt-level, Highly Efficient, Fully Integrated Linear Power Amplification for mm-Wave Radar and Communications," Jet Propulsion Laboratory, Pasadena, CA, Jul 2012.
36. "NFL Football Tracking, Microrobots and Nanoelectronics: Novel applications of Analog Circuits, E&M and MEMS," University of FL, Apr 2012.
37. "RF devices, circuits & systems: from nanometers to kilometers," University of Illinois, Urbana Champagne, Apr 2012.
38. "Applications of Analog Circuits and Electromagnetics in mm-wave RF and μRobots," NCSU Mar 2012.
39. "RF from Kilometer- to Millimeter-waves: NFL Football Tracking and Power Amplifier Circuits & Systems," UMich. Mar 2012.
40. "RF devices, circuits and systems: from nanometer to kilometer" University of Utah, Feb 2012
41. "NFL Football Tracking and Microrobots: Novel Applications of Analog Circuits, MEMS and E&M," Harvard University, Feb 2012
42. "RF devices, circuits and systems: from nanometer to kilometer," Duke Univ, Jan 2012
43. "At the boundaries of high-frequency analog & RF ICs: Speed, energy and uncertainty", Univ. NC State, NC, Dec 2011, (**Invited, Distinguished Lecturer**)
44. "Quasistatics in E&M: Sports Visualization, Wireless Power and Microrobots," Ga Tech, GA Nov. 2011.
45. "RF devices, circuits and systems: from nanometer to kilometer," Univ. of Texas, Austin, Oct 2011
46. "RF devices, circuits and systems: from nanometer to kilometer," Princeton Univ., Oct 2011
47. "High-speed PA and ADCs," Univ. Wisconsin, Oct. 2011
48. "At the boundaries of high-frequency analog & RF ICs: Speed, energy and uncertainty", GA Tech, GA, May 2011
49. "RF PA's and spin-torque oscillators for RF," University of FL, Mar, 2011
50. "Tip-directed, Field-assisted Nanofabrication," NIST, Mar 2011.
51. "Extending the boundaries of analog and RF electronics," Brown Univ., Mar, 2011.
52. "Nanoscale magnetics for integrated power conversion and RF," ARL, Jan, 2011.
53. "Ultimate limitation of conversion in conventional ADCs," ONR Superconducting Electronics Program, San Diego, Jan. 2011.
54. "Tip-assisted, field emission nanofabrication," Zyvex Corp., Apr., 2010.
55. "Tip-assisted Nanofabrication," Worcester Polytechnic Institute, MA, Mar. 2010.
56. "Spin Torque Oscillators for Agile RF," DARPA YFA Program, Oct. 2009.
57. "Perspectives on electrical oscillators," IBM Research, NY, Apr., 2009
58. "Electrical oscillators and phase noise," NIST, Boulder, CO, Oct. 2008
59. "Creativity in science and engineering," Innovation in Science and Engineering, Harvard University, Oct. 2008
60. "The Double Helix, a case study in scientific discovery," Innovation in Science & Technology, Paris University Consortium, Paris France, 2008.
61. "Creativity in science and engineering," Innovation in Science & Technology, Paris University Consortium, Paris France, 2008.
62. "New directions : soliton mode-locking and nanowire circuits," CMU, Sept. 2006
63. "Electrical soliton oscillators" University of Michigan, Mar, 2006
64. "Electrical soliton oscillator and nanowire Circuits," University of California, Berkeley, Apr. 2006
65. "Electrical soliton oscillators," Cornell University, Mar 2006.
66. "Electrical solitons," The Cooper Union, Feb. 2006.

<u>STEM Workshops, K-12</u>

MYW Semitech Exhibit 2019
TSMC and Apple v. MYW Semitech - IPR2026-00066

1. STEM workshop for middle-school students in collaboration with Naval Information Warfare Center Atlantic STEM. July 2023.
2. IEEE Project CONNECT workshop teaching High School how to build AM radio. June 2023.

Patents

1. Ricketts, et.al U.S. Patent No. 8,154,354 "Nonlinear pulse oscillator methods and apparatus".
2. Ricketts, et. al U.S. Patent No. 7,339,440 "Nonlinear pulse oscillator methods and apparatus"
3. Arumugam, et. al U.S. Patent No. 9,625,247 "Systems and methods for position tracking using magnetoquasistatic fields"
4. Ricketts and Besnoff, U.S. Patent Application US20230353181A1, "Self-powered bluetooth backscatter sensor system."

MYW Semitech Exhibit 2019
TSMC and Apple v. MYW Semitech - IPR2026-00066

III.C. ORGANIZATION PARTICIPATION

Participation in centers, consortia, institutes, interdisciplinary/multidisciplinary activities and other organized scholarly efforts between departments within and across colleges or institutions

N/A

IV. EXTENSION AND ENGAGEMENT WITH CONSTITUENCIES OUTSIDE THE UNIVERSITY

Faculty Affliate (2023-) Bloomberg Cities Center, Kennedy School of Government
Faculty Associate (2014-), Innovation Fellow (2011-2014) Technology and Entrepreneurship Center, School of Engineering and Applied Science (SEAS), Harvard University. Courtesy appointment in SEAS for collaboration on innovation with students and faculty. Guest lecture in ES139/239 courses and assist with program development for symposia.

IV.A ACCOMPLISHMENTS

List accomplishments as applicable, e.g., bulletins, brochures, reports, pamphlets, non-refereed publications, computer software, educational videotapes, slide sets, popular press articles, and other pertinent evidence.

Experiential ECE Lectures – 800,000 You Tube views (two lectures)

Online dissemination of RF system design - ~**200,000 You Tube** views. Non-NCSU watch **800+ hours viewed per month** of PIs RF system design YouTube videos.

Developed two online courses including 70 video lectures and 20 laboratory assignments.
www.rickettslab.org/radiosystemdesign
www.rickettslab.org/adc

IV.B. PROGRAM IMPACTS

Describe results/impact of accomplishment.

N/A

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MYW Semitech Exhibit 2019
TSMC and Apple v. MYW Semitech - IPR2026-00066

VI. SERVICE TO THE UNIVERSITY AND PROFESSIONAL SOCIETIES

University service (department, college, and university committees and governance organizations); state, regional, national and international professional activities and committee work, including professional associations.

DEPARTMENT SERVICE

Teaching Review Committee F22-
Promotion, Tenure Committee Co-Chair 2023
Marketing and Communication (ECE Department) – 2020-22
ECE Open House (ECE Department) – 2020-
Faculty Search Committee (ECE Department) – 2017, 2019, 2022
Course Curricula Committee (ECE Department) - 2015-present
Senior Design Director Search Committee (ECE Department) - 2014
Participated in Engineering Open House (ECE Department), 2014

UNIVERSITY SERVICE
N/A

PROFESSIONAL SOCIETIES

Chair, IEEE Chapter ACME (Joint chapter of Antennas and Propagation (AP), Electronic Packaging Society (EP), Microwave Theory and Techniques (MTT), and Electron Devices (ED) 2019-2023

Technical Committee **Chair** for IEEE T-MTT 9 Society 2020-2022

Technical Committee **Vice-chair** for IEEE T-MTT 7 Society 2015-2019

Technical Program **Chair**: Enabling Nanomanufacturing for Rapid Innovation, TRC/NSF Workshop, Aug. 2013

Technical Program Committee (member) – IEEE International Microwave Symposium 2014-;

Technical Program Committee IEEE BioWireless 2012-2015.

Session Chair - Nanotechnology, CMOS Emerging Technologies Conf., Banff, Canada 2009; NANO-DDS, Chemically-Synthesized, Biomimetic Systems and Biologically-Inspired Architectures Session, August 2011.

NSF Panelist (6 panels)

Reviewer for journals: ACS Nano Letters, Journal of Solid State Circuits (IEEE)Electron Device Letters (IEEE)Transactions on Circuits and Systems (IEEE)Proceedings of the National Academy of Sciences, MacArthur Foundation (Fellows program)Nano Letters, Sensors Journal of Applied Physics, Journal of Emerging and Selected Topics in Power Electronics, IET Circuits, Devices & Systems, IEEE Transactions on Power Electronics, IEEE Antennas and Wireless Propagation Letters, IEEE Transaction on Antennas and Propagation, IEEE Microwave and Wireless Components Letters, IEEE Transactions on Biomedical Circuits and Systems, Micromcahines, IET Microwaves, Antennas & Propagation, International Journal of Circuit Theory and Applications, Scientific Reports.

MYW Semitech Exhibit 2019
TSMC and Apple v. MYW Semitech - IPR2026-00066