Abbas Semnani

Contact Information

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Research Interests

Reconfigurable microwaves, high-power RF electronics, low-temperature plasma, tunable antennas, computational electromagnetics/plasma, electrically small antennas

Appointments

The University of Toledo

- Assistant Professor of EECS — 2019-present

  Founding Director of the *Adaptive Radiofrequency and Plasma Lab (ARPL)*

Purdue University

- Research Assistant Professor — 2017-2019
- Senior Research Scientist — 2015-2017
- Postdoctoral Research Associate — 2012-2015

K. N. Toosi University of Technology

- Research and Teaching Associate — 2009-2012

Research Grants

- "Ultra-high efficiency microwave plasma for extreme low-power applications," National Science Foundation (NSF), ECCS-2102100, (Single PI), 2021-2024.
- "Plasma Impedance Matching Networks," Lockheed Martin, 4105131951, (Single PI), 2021-2023.
- "Ultra-wideband and highly efficient plasma-matched small HF antennas," Office of Naval Research (ONR), N00014-21-1-2449, (Single PI), 2021-2024.
- "Reconfigurable plasma protection against high power microwaves," Office of Naval Research (ONR), N00014-21-1-2441, (Co-PI), 2021-2024.
- "Wideband and high-power reconfigurable plasma matching network for compact and efficient phased array emitters," Office of Naval Research (ONR), N00014-19-1-2549, (Co-PI), 2019-2022.
- "Real-time optimization of fundamental and harmonic load impedances, source impedance, input power, and bias," NSWC Crane, N00164-19-1-1002, (Co-PI), 2019-2020.
- "Plasmas for low noise reconfigurable RF systems," National Science Foundation (NSF), ECCS-1619547, (Co-PI), 2016-2019.
- "Reconfigurable power amplifier and filter technology for real-time adaptive next generation radar," Army Research Lab (ARL), W911NF-16-2-0054, (Co-PI), 2016-2018.
- "Plasma-tunable radio-frequency elements," Lockheed Martin Aeronautics Company, 6574009847, (Co-PI), 2017.

Awards

- The IEEE Microwave and Wireless Components Letters (MWCL) "Tatsuo Itoh" Award for the paper entitled: "An Electronically Tunable High-Power Impedance Tuner with Integrated Closed-Loop Control", 2019.
- European Microwave Weeks (EuMW) student travel awards, 2007 and 2010.

Education

K. N. Toosi University of Technology

Ph.D., Electrical and Computer Engineering, 2009

- Thesis: Time-Domain Electromagnetic Inverse Scattering
- Ph.D. Visiting Scholar, Aristotle University of Thessaloniki, 2008

M.Sc., Electrical and Computer Engineering, 2002

University of Tehran

B.Sc., Electrical and Computer Engineering, 2000

Teaching Experience

The University of Toledo

- EECS3440, Electronics Laboratory — Fall 2019, Spring 2020, Fall 2020
- EECS3710, Electromagnetics I — Fall 2020, Fall 2021
- EECS3720, Electromagnetics II — Spring 2021

Purdue University

- Guest Lecturer, "Electrical Circuits" — Fall 2012
- Mentor of the "Wireless Power Transfer" team — Fall 2012

K. N. Toosi University of Technology

- Instructor, "Differential Equations" and "Engineering Mathematics" — 2009-2011

Invited Talks

T9. **A. Semnani**, S. Macheret, and D. Peroulis, "Plasma metamaterial: A potential solution for wideband electrically-small antennas," 10^{th} *International Workshop on Microplasmas (IWM-10)*, Kyoto, Japan, May 2019.

T8. **A. Semnani**, S. Macheret, and D. Peroulis, "Microwave microplasma: From destructive power-limiting effects to promising high-power tuning applications," 9^{th} *International Symposium on Plasma Nanoscience and Nanotechnology (iPlasmaNano-IX)*, New Buffalo, MI, August 2018.

T7. **A. Semnani**, S. Macheret, and D. Peroulis, "Low-temperature plasma for high-power microwave tuning," *IEEE International Microwave Workshop Series on Advanced Materials and Processes (IMWS-AMP)*, Pavia, Italy, September 2017.

T6. **A. Semnani**, and D. Peroulis, "Cold plasma-enabled tunable RF devices," *IEEE Wireless and Microwave Technology Conference (WAMICON)*, Clearwater, FL, April 2016.

T5. **A. Semnani**, "From graduate school to the job market; My story as an IEEE-MTT Member," *Graduates of the Last Decade (GOLD) Session, IEEE International Microwave symposium (IMS)*, Tampa, FL, June 2014.

T4. **A. Semnani** and D. Peroulis, "Radio frequency gas breakdown and micro/nano-plasma formation in high-power evanescent-mode cavity resonators," *General Assembly and Scientific Symposium of the International Union of Radio Science (URSI-GASS)*, Beijing, China, August 2014.

T3. **A. Semnani** and D. Peroulis, "High frequency gas breakdown and microplasma formation in evanescent-mode cavity resonators," *Annual Meeting of the Electrostatics Society of America (ESA)*, Notre Dame, IN, June 2014.

T2. D. Peroulis and **A. Semnani**, "RF discharges phenomena in miniaturized RF MEMS cavity-based filters," 66^{th} *Annual Gaseous Electronics Conference (GEC)*, Princeton, NJ, 2013.

T1. **A. Semnani**, "Time Domain Inverse Scattering," Aristotle University of Thessaloniki, Thessaloniki, Greece, November 2008.

Professional Services

- Reviewer for
  - *IEEE Transactions on Plasma Science*
  - *IEEE Transactions on Microwave Theory and Techniques*
  - *IEEE Transactions on Antennas and Propagation*
  - *IEEE Transactions on Geoscience and Remote Sensing*
  - *IEEE Transactions on Very Large Scale Integration Systems*
  - *IEEE Transactions on Circuits and Systems II*
  - *IEEE Antennas and Wireless Propagation Letters*
  - *IEEE Microwave and Wireless Components Letters*
  - *IEEE Geoscience and Remote Sensing Letters*
  - *IEEE Electron Device Letters*
  - *Journal of Applied Physics*
  - *Physics of Plasmas*
  - *Plasma Sources Science and Technology*
  - *Applid Physics Letters*
  - *Journal of Physics D: Applied Physics*
  - *Optics Letters*
  - *Europhysics Letters*
  - *Electronics Letters*
  - John Wiley & Sons
- Guest Editor of the *IEEE Microwave Magazine* December 2016 special issue
- Technical Committee Member of the *IEEE Radio & Wireless Week (RWW), 2017*
- Program Committee Member of the *American Physical Society Division of Plasma Physics (APS DPP), 2021*

Professional Affiliations

- IEEE Senior Member
- IEEE Antennas and Propagation
- IEEE Microwave Theory and Techniques
- IEEE Geoscience and Remote Sensing
- IEEE Nuclear and Plasma Sciences
- American Physical Society (APS)
- Applied Computational Electromagnetics Society (ACES)

Book Chapters

B2. **A. Semnani** and M. Kamyab, "A hybrid method for solving 2-D inverse scattering problems," *Ultra-Wideband, Short Pulse Electromagnetics 9*, Eds.: F. Sabath, D. V. Giri, F. Rachidi, and A. Kaelin, Springer, Germany, pp. 89-99, 2010, ISBN: 978-0-387-77844-0.

B1. **A. Semnani** and M. Kamyab, "Solving inverse scattering problems using truncated cosine Fourier series expansion method," *Advanced Microwave Circuits and Systems*, Ed.: V. Zhurbenko, In-Tech, Croatia, pp. 455-470, 2010, ISBN: 978-953-307-087-2.

Patents

P1. **A. Semnani**, "Power-efficient microwave plasma jet based on evanescent-mode cavity technology". (submitted)

Journal Publications

J31. **A. Semnani** and K. S. Kabir, "A highly-efficient microwave plasma jet based on evanescent-mode cavity-resonator technology," *IEEE Transactions on Plasma Science*. (to be submitted)

J30. G. Shaffer, J. Johnson, **A. Semnani**, and D. Peroulis, "Theory and design of high-power resonant impedance tuners," *IEEE Transactions on Microwave Theory and Techniques*. (to be submitted)

J29. G. Shaffer, J. Johnson, **A. Semnani**, and D. Peroulis, "A 1-2 GHz continuously reconfigurable and high-efficiency 100-W power amplifier," *IEEE Access*. (under review)

J28. S. N. Ramesh and **A. Semnani**, "A comprehensive circuit modeling approach for self-sustained capacitively-coupled microwave plasmas," *IEEE Transactions on Plasma Science*, vol. 49, no. 9, pp. 2690-2699, September 2021.

J27. **A. Semnani**, B. Baskaran, and D. Peroulis, "Microwave wireless powering of sensored agricultural tiles," *IEEE Transactions on Antennas and Propagation*, vol. 69, no. 5, pp. 2913-2920, May 2021.

J26. H. An, Z. Yin, C. Mitchell, **A. Semnani**, A. R. Hajrasouliha, and M. Hosseini, "Nanodiamond ensemble-based temperature measurement in living cells and its limitations," *Measurement Science and Technology*, 32, 015701, 2021.

J25. Z. Vander Missen, **A. Semnani**, and D. Peroulis, "Plasma-based power limitation for highly linear MEMS switch protection and isolation enhancement," *IEEE Access*, vol. 8, pp. 173103-173111, 2020.

J24. V. Podolsky, **A. Semnani**, and S. O. Macheret, "Experimental and numerical studies of a tunable plasma antenna sustained by RF power," *IEEE Transactions on Plasma Science*, vol. 48, no. 10, pp. 3524-3534, October 2020.

J23. A. Dockendorf, A. Egbert, E. Langley, C. Calabrese, J. Alcala-Medel, S. Rezayat, Z. Hays, C. Baylis, A. Martone, E. Viveiros, K. Gallagher, **A. Semnani**, and D. Peroulis, "Fast optimization algorithm for evanescent-mode cavity tuner optimization and timing reduction in software-defined radar implementation," *IEEE Transactions on Aerospace and Electronic Systems*, vol. 56, no. 4, pp. 2762-2778, August 2020.

J22. **A. Semnani**, G. S. Shaffer, Y.-C. Wu, and D. Peroulis, "High-power impedance tuner utilizing substrate-integrated evanescent-mode cavity technology and external linear actuators," *IET Microwaves, Antennas and Propagation*, vol. 13, no. 12, pp. 2067-2072, October 2019.

J21. **A. Semnani**, M. D. Sinanis, and D. Peroulis, "An evanescent-mode cavity-backed high-power tunable slot antenna," *IEEE Transactions on Antennas and Propagation*, vol. 67, no. 6, pp. 3712-3719, June 2019.

J20. **A. Semnani**, S. Macheret, and D. Peroulis, "A quasi-absorptive microwave resonant plasma switch for high-power applications," *IEEE Transactions on Microwave Theory and Techniques*, vol. 66, no. 8, pp. 3798-3806, August 2018.

J19. C. Qu, P. Tian, **A. Semnani**, M. J. Kushner, "Properties of arrays of microplasmas: application to control of electromagnetic waves," *Plasma Sources Science and Technology*, vol. 26, no. 10, 105006, 2017.

J18. **A. Semnani**, M. A. Khater, Y. C. Wu, and D. Peroulis, "An electronically-tunable high-power impedance tuner with integrated closed-loop control," *IEEE Microwave and Wireless Components Letters*, vol. 27, no. 8, pp. 754-756, August 2017.

J17. **A. Semnani**, S. Macheret, and D. Peroulis, "A high-power widely-tunable limiter utilizing an evanescent-mode cavity resonator loaded with a gas discharge tube," *IEEE Transactions on Plasma Science*, vol. 44, no. 12, pp. 3271-3280, December 2016.

J16. **A. Semnani**, D. Peroulis, and S. Macheret, "Plasma-enabled tuning of a resonant RF circuit," *IEEE Transactions on Plasma Science*, vol. 44, no. 8, pp. 1396-1404, August 2016.

J15. S. Tholeti, **A. Semnani**, D. Peroulis, and A. Alexeenko, "Dark-to-arc transition in field emission dominated atmospheric microdischarges," *Physics of Plasmas*, 22, 083508, 2015.

J14. **A. Semnani** and D. Peroulis, "Contribution of ions in radio frequency properties of atmospheric pressure microgaps," *Applied Physics Letters*, 105, 253105, 2014.

J13. **A. Semnani** and D. Peroulis, "Evaluation of RF micro-discharge regimes in the performance of evanescent-mode cavity resonators," *IET Electronics Letters*, vol. 50, no. 17, pp. 1244-1246, August 2014.

J12. S. Ebadi and **A. Semnani**, "Mutual coupling reduction in waveguide slot array antennas using electromagnetic band-gap (EBG) structures," *IEEE Antennas and Propagation Magazine*, vol. 56, no. 3, pp. 68-79, June 2014.

J11. **A. Semnani**, K. Chen, and D. Peroulis, "Microwave gas breakdown in tunable evanescent-mode cavity resonators," *IEEE Microwave and Wireless Components Letters*, vol. 24, no. 5, pp. 351-353, May 2014.

J10. **A. Semnani**, A. Venkattraman, A. Alexeenko, and D. Peroulis, "Frequency response of atmospheric pressure gas breakdown in micro/nanogap," *Applied Physics Letters*, 103, 063102, 2013.

J9. **A. Semnani**, A. Venkattraman, A. Alexeenko, and D. Peroulis, "Pre-breakdown evaluation of gas discharge mechanisms in microgaps," *Applied Physics Letters*, 102, 174102, 2013.

J8. D. Oloumi, S. Ebadi, A. Kordzadeh, **A. Semnani**, P. Mousavi, and X. Gong, "Miniaturized reflectarray unit cell using fractal-shaped patch-slot configuration," *IEEE Antennas and Wireless Propagation Letters*, vol. 11, pp. 10-13, 2012.

J7. **A. Semnani**, I. T. Rekanos, M. Kamyab, and M. Moghaddam, "Solving inverse scattering problems based on truncated cosine Fourier and cubic B-spline expansions," *IEEE Transactions on Antennas and Propagation*, vol. 60, no. 12, pp. 5914-5923, Dec. 2012.

J6. **A. Semnani**, I. T. Rekanos, M. Kamyab, and T. G. Papadopoulos, "Two-dimensional microwave imaging based on hybrid scatterer representation and differential evolution," *IEEE Transactions on Antennas and Propagation*, vol. 58, no. 10, pp. 3289-3298, Oct. 2010.

J5. **A. Semnani**, M. Kamyab, and I. T. Rekanos, "Reconstruction of one-dimensional dielectric scatterers using differential evolution and particle swarm optimization," *IEEE Geoscience and Remote Sensing Letters*, vol. 6, no. 4, pp. 671-675, Oct. 2009.

J4. **A. Semnani** and M. Kamyab, "An enhanced hybrid method for solving inverse scattering problems," *IEEE Transactions on Magnetics*, vol. 45, no. 3, pp. 1534-1537, March 2009.

J3. **A. Semnani** and M. Kamyab, "Truncated cosine Fourier series expansion method for solving 2-D inverse scattering problems," *Progress In Electromagnetics Research*, vol. 81, pp. 73–97, 2008.

J2. **A. Semnani** and M. Kamyab, "An Enhanced Method for Inverse Scattering Problems using Fourier Series Expansion in Conjunction with FDTD and PSO," *Progress In Electromagnetics Research*, vol. 76, pp. 45-64, 2007.

J1. A. Mahmoudi, **A. Semnani**, R. Alizadeh, and R. Adeli, "Negative refraction of a three-dimensional metallic photonic crystal," *European Physical Journal Applied Physics*, vol. 39, pp. 27-32, 2007.

Conference Proceedings

C30. C. Baylis, D. Sicker, S. Blun, E. Fernandez, A. Clegg, S. Hutton, Z. Han, D. Jackson, R. Henderson, R. Narayanan , **A. Semnani**, snd T. Tuinstra, "SMART Hub: Solving the spectrum crisis through parallel research in policy, technology, security, and economics for future adaptive and reconfigurable wireless systems," *IEEE Texas Symposium WMCS*, Waco, TX, 2021.

C29. Z. Vander Missen, S. O. Macheret, **A. Semnani**, and D. Peroulis, "Plasma switch-based technology for high-speed and high-power impedance tuning," *IEEE Wireless and Microwave Technology Conference (WAMICON)*, Clearwater, FL, 2021. *(Best Student Paper Award)*

C28. A. Fisher, Z. Vander Missen, **A. Semnani**, and D. Peroulis, "A low-loss 1-4 GHz optically-controlled silicon plasma switch," *IEEE Wireless and Microwave Technology Conference (WAMICON)*, Clearwater, FL, 2021.

C27. J. Alcala-Medel, A. Egbert, C. Calabrese, A. Dockendorf, C. Baylis, G. Shaffer, **A. Semnani**, D. Peroulis, E. Viveiros, K. Gallagher, and A. Martone, "Fast frequency-agile real-time optimization of high-power tuning network for cognitive radar applications," *IEEE International Microwave Symposium (IMS)*, Boston, MA, 2019.

C26. Z. Vander Missen, **A. Semnani**, and D. Peroulis, "Toward a high-power high-isolation wideband plasma limiter," *IEEE Wireless and Microwave Technology Conference (WAMICON)*, Cocoa, FL, 2019.

C25. Z. Vander Missen, **A. Semnani**, and D. Peroulis, "Microwave-driven CPW microplasma generator for low-power discharge," *IEEE International Microwave Workshop Series on Advanced Materials and Processes (IMWS-AMP)*, Ann Arbor, MI, 2018.

C24. **A. Semnani**, M. D. Sinanis and D. Peroulis, "High-power and widely-tunable evanescent-mode cavity-backed slot antenna," *IEEE International Symposium on Antennas and Propagation (AP-S)*, Boston, MA, 2018.

C23. Z. Vander Missen, **A. Semnani**, and D. Peroulis, "High-power wideband low-cost limiters using cold plasma," *IEEE International Microwave Symposium (IMS)*, Philadelphia, PA, 2018.

C22. S. Rezayat, C. Kappelmann, Z. Hays, L. Hays, C. Baylis, E. Viveiros, **A. Semnani**, and D. Peroulis, "Real-time frequency-agile circuit reconfiguration for S-band radar using a high-power tunable resonant cavity matching network," *IEEE International Microwave Symposium (IMS)*, Philadelphia, PA, 2018.

C21. Z. Vander Missen, **A. Semnani**, E. Viveiros, and D. Peroulis, "Interaction of high-power microwaves with low-temperature plasma in a gas-discharge-tube-loaded SIW structure," *IEEE Radio and Wireless Symposium (RWS)*, Anaheim, CA, 2018.

C20. Z. Hays, C. Kappelmann, L. Lamers, C. Baylis, M. Abu Khater, **A. Semnani**, D. Peroulis, E. Viveiros, and J. Penn, "Fast impedance matching using interval halving of resonator position numbers for a high-power evanescent-mode cavity tuner," *IEEE Radio and Wireless Symposium (RWS)*, Anaheim, CA, 2018.

C19. Y. C. Wu, M. A. Khater, **A. Semnani**, and D. Peroulis, "An S-band 3-W load-reconfigurable power amplifier with $50 \sim 76\%$ efficiency for VSWR up to 4:1," *IEEE International Microwave Symposium (IMS)*, Honolulu, HI, 2017.

C18. **A. Semnani**, S. Macheret, and D. Peroulis, "A 2-30 W S-band plasma-based switch," *IEEE Wireless and Microwave Technology Conference (WAMICON)*, Cocoa, FL, 2017.

C17. Z. Hays, C. Baylis, R. J. Marks, M. A. Khater, **A. Semnani**, and D. Peroulis, "Fast amplifier PAE optimization using resonant frequency interval halving with an evanescent-mode cavity tuner," *IEEE Texas Symposium on Wireless and Microwave Circuits and Systems*, Waco, TX, 2017.

C16. **A. Semnani**, H. J. Yang, M. Sinanis, S-J. Park, J. G. Eden, S. O. Macheret, and D. Peroulis, "Power limiting characteristics of a plasma-loaded evanescent-mode cavity resonator," 46^{th} *European Microwave Conference (EuMC)*, London, United Kingdom, 2016.

C15. **A. Semnani**, M. Sinanis, G. S. Shaffer, and D. Peroulis, "Field emission mitigation in X-band silicon-etched cavity resonators," *IEEE International Microwave Symposium (IMS)*, San Francisco, CA, 2016.

C14. **A. Semnani**, H. J. Yang, M. Sinanis, S-J. Park, J. G. Eden, S. O. Macheret, and D. Peroulis, "Low temperature plasma for tunable resonant attenuation," *IEEE International Microwave Symposium (IMS)*, San Francisco, CA, 2016.

C13. **A. Semnani**, Z. Vander Missen, S. Macheret, and D. Peroulis, "Gas discharge tube-based variable RF attenuator," *IEEE Wireless and Microwave Technology Conference (WAMICON)*, Clearwater, FL, 2016.

C12. **A. Semnani**, S. Macheret, and D. Peroulis, "A tunable VHF gas discharge tube resonator," *IEEE Radio and Wireless Symposium (RWS)*, Austin, TX, 2016.

C11. **A. Semnani** and D. Peroulis, "Electromagnetic sensitivity analysis of RF gas micro /nano-breakdown," *IEEE International Symposium on Antennas and Propagation (AP-S)*, Memphis, TN, 2014.

C10. **A. Semnani** and D. Peroulis, "Nano-plasma tunable evanescent-mode cavity resonators," *IEEE International Microwave Symposium (IMS)*, Tampa, FL, 2014.

C9. **A. Semnani** and D. Peroulis, "Electromagnetic simulation of gas discharge effects in RF microgaps," *IEEE International Symposium on Antennas and Propagation (AP-S)*, Orlando, FL, 2013.

C8. **A. Semnani** and D. Peroulis, "The influence of gas discharge in Nano-gap RF conductivity," *IEEE International Microwave Symposium (IMS)*, Seattle, WA, 2013.

C7. K. Chen, **A. Semnani**, and D. Peroulis, "High-power microwave gas discharge in high-Q evanescent-mode cavity resonator and its instantaneous/long-term effects," *IEEE International Microwave Symposium (IMS)*, Seattle, WA, 2013.

C6. **A. Semnani**, A. Venkattraman, A. Alexeenko, and D. Peroulis, "Numerical evaluation of RF gas ionization effects in micro- and nano-scale devices," *International Conference on Electromagnetics in Advanced Applications (ICEAA)*, Cape Town, South Africa, 2012.

C5. **A. Semnani**, I. T. Rekanos, and M. Kamyab, "One-dimensional profile reconstruction using cosine Fourier and cubic B-spline expansions," 40^{th} *European Microwave Conference (EuMC)*, Paris, France, 2010.

C4. **A. Semnani** and M. Kamyab, "Comparison of Differential evolution and particle swarm optimization in one-dimensional reconstruction problems," 20^{th} *Asia-Pacific Microwave Conference (APMC)*, Hong Kong, China, 2008.

C3. **A. Semnani** and M. Kamyab, "An enhanced hybrid method for solving inverse scattering problems," 13^{th} *Biennial IEEE Conference on Electromagnetic Field Computations (CEFC)*, Athens, Greece, 2008.

C2. **A. Semnani** and M. Kamyab, "Cosine Fourier series expansion method for 2-D inverse scattering problems," 37^{th} *European Microwave Conference (EuMC)*, Munich, Germany, 2007.

C1. **A. Semnani** and M. Kamyab, "A computationally efficient method in inverse scattering using Fourier series expansion in conjunction with FDTD and PSO," *Workshop on Computational Electromagnetics in Time-Domain (CEM-TD)*, Perugia, Italy, 2007.

Conference Abstracts

A35. S. Mahajan, A. M. Loveless, **A. Semnani**, and A. L. Garner, "Asymptotic analysis of AC microscale gas breakdown," 74^{th} *Annual Gaseous Electronics Conference (GEC)*, Virtual, 2021.

A34. S. Mahajan, A. M. Loveless, **A. Semnani**, and A. L. Garner, "Theoretical analysis of microwave breakdown for microscale gaps," *IEEE International Conference on Plasma Science (ICOPS)*, Virtual, 2021.

A33. V. Podolsky, **A. Semnani**, and S. O. Macheret, "Experimental study of a low noise tunable plasma antenna sustained by CW and pulsed RF power," 72^{th} *Annual Gaseous Electronics Conference (GEC)*, College Station, TX, 2019.

A32. **A. Semnani**, Z. Vander Missen, and D. Peroulis, "Toward a wideband and high-isolation power limiter," *IEEE International Conference on Plasma Science (ICOPS)*, Orlando, FL, 2019.

A31. A. Loveless, Z. Vander Missen, **A. Semnani**, and A. Garner, "RF gas breakdown theory and experiment as a function of gas, gap size, frequency, and pressure," *IEEE International Conference on Plasma Science (ICOPS)*, Orlando, FL, 2019.

A30. **A. Semnani**, M. D. Sinanis, and D. Peroulis, "Evanescent-mode cavity-backed tunable slot antenna," *USNC-URSI National Radio Science Meeting (NRSM)*, Boulder, CO, 2019.

A29. **A. Semnani**, B. Baskaran, and D. Peroulis, "Wireless microwave powering of agricultural sensors," *USNC-URSI National Radio Science Meeting (NRSM)*, Boulder, CO, 2019.

A28. J. A. Alcala-Medel, C. Calabrese, C. Baylis, A. Martone, K. Gallagher, E. Viveiros, **A. Semnani**, and D. Peroulis, "Fast reconfiguration of second-generation tunable evanescent-mode cavity matching network for frequency agility in S-band cognitive radar applications," *USNC-URSI National Radio Science Meeting (NRSM)*, Boulder, CO, 2019.

A27. A. Dockendorf, E. Langley, A. Egbert, C. Baylis, **A. Semnani**, D. Peroulis, A. Martone, E. Viveiros, and R. J. Marks II, "Frequency-agile reconfiguration for a high-power resonant cavity tuner using previous search results," *USNC-URSI National Radio Science Meeting (NRSM)*, Boulder, CO, 2019.

A26. C. Baylis, A. Martone, K. Gallagher, E. Viveiros, **A. Semnani**, D. Peroulis, and R. J. Marks II, "Software defined, spectrally sensitive radar transmission," *USNC-URSI National Radio Science Meeting (NRSM)*, Boulder, CO, 2019.

A25. **A. Semnani**, S. Macheret, and D. Peroulis, "Plasma-based electrically small antennas," 71^{th} *Annual Gaseous Electronics Conference (GEC)*, Portland, OR, 2018.

A24. S. Macheret, **A. Semnani**, D. Peroulis, S. S. Tholeti, A. Alexeenko, A. Khomenko, and V. Podolsky, "Spatial and temporal manipulation of plasmas for RF electronics," 9^{th} *International Symposium on Plasma Nanoscience and Nanotechnology (iPlasmaNano-IX)*, New Buffalo, MI, 2018.

A23. **A. Semnani**, Z. Vander Missen, and D. Peroulis, "Microplasma generation in low-power microwave coplanar waveguide (CPW) structures," *IEEE International Conference on Plasma Science (ICOPS)*, Denver, CO, 2018.

A22. **A. Semnani**, D. Peroulis, and S. Macheret, "Analysis of plasma parameters and conditions required for reconfigurable antennas," *IEEE International Conference on Plasma Science (ICOPS)*, Denver, CO, 2018.

A21. **A. Semnani**, Z. Vander Missen, and D. Peroulis, "A wideband and high-power plasma-based microwave power limiter," *IEEE International Conference on Plasma Science (ICOPS)*, Denver, CO, 2018.

A20. A. L. Garner, A. M. Loveless, Z. Vander Missen, and **A. Semnani**, "AC gas breakdown: from simple scaling laws to experiments," *IEEE International Conference on Plasma Science (ICOPS)*, Denver, CO, 2018.

A19. **A. Semnani**, S. Macheret, and D. Peroulis, "Plasma varactor for reconfigurable RF/microwave systems," *USNC-URSI National Radio Science Meeting (NRSM)*, Boulder, CO, 2018.

A18. **A. Semnani**, M. Abu Khater, D. Peroulis, C. Baylis, L. Hays, C. Kappelmann, and Z. Hays, "An evanescent-mode cavity-based high-power impedance tuner for adaptive radar applications," *USNC-URSI National Radio Science Meeting (NRSM)*, Boulder, CO, 2018.

A17. **A. Semnani**, S. Macheret, and D. Peroulis, "High-power microwave tunable resistor based on low-temperature plasma technology," *USNC-URSI National Radio Science Meeting (NRSM)*, Boulder, CO, 2018.

A16. Z. Vander Missen, **A. Semnani**, and D. Peroulis, "Plasma cell loaded transmission line technologies for broadband applications," *USNC-URSI National Radio Science Meeting (NRSM)*, Boulder, CO, 2018.

A15. C. Kappelmann, L. Hays, Z. Hays, S. Rezayat, C. Baylis, R. J. Marks, E. Viveiros, M. Abu Khater, **A. Semnani**, and D. Peroulis, "Frequency-agile power amplifier matching network reconfiguration using a hybrid real-time search," *USNC-URSI National Radio Science Meeting (NRSM)*, Boulder, CO, 2018.

A14. L. Hays, S. Rezayat, Z. Hays, A. Egbert, C. Kappelmann, C. Baylis, R. J. Marks, E. Viveiros, D. Peroulis, M. Abu Khater, and **A. Semnani** "Direct tuning of cavity position numbers for circuit optimization using an evanescent-mode cavity tuner dsigned for reconfigurable radar transmission," *USNC-URSI National Radio Science Meeting (NRSM)*, Boulder, CO, 2018.

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