

Robert W. Jackson

Department of Electrical and Computer Engineering
University of Massachusetts at Amherst
Amherst, Massachusetts 01003

Phone: (413) 545-1386
FAX: (413) 545-4611
email: jackson@ecs.umass.edu

Education:

B.S.E.E. Northeastern University, Summa Cum Laude (1975)
M.S.E.E. Northeastern University, (1980)
Ph.D. Northeastern University (1981), Advisor: Kenneth Golden
Dissertation Title: Electromagnetic Turbulence in Space Plasmas

Employment:

Professor, University of Massachusetts/Amherst, September 2001.
Associate Professor, University of Massachusetts/Amherst, January 1989.
Assistant Professor, University of Massachusetts/Amherst, September 1982.
Assistant Professor, Northeastern University, December 1981 to August 1982.
Instructor, Northeastern University, September 1976 to September 1978.
Consultant, Hewlett Packard Co., 1990 (Lightwave/ Microwave Electronics)
Air Force Summer Faculty Research Fellow, 1984 (Electromagnetic Modeling)
Research Assistant, Northeastern University, 1978 - 1981(Space Plasmas)
Graduate Co-op Student Genrad Co., 1975 - 1976 (Test Equipment design).

Research Interests:

(1) Electromagnetics for microwave and millimeterwave integrated circuits and packages, (2) Microwave and millimeter wave integrated circuit design. (3) RF/mmW Electronics for communications and sensing

Professional Activities:

Fellow of the IEEE: Elected in 2004 “for contributions to the electromagnetic modeling of microwave integrated circuits and packaging”
Associate Editor “Transactions on Microwave Theory and Techniques” 2008-2010
Technical Committee - IEEE Society on Microwave Theory and Techniques, 1999-
(Chair (2009-2011) and Vice Chair (2006-2009) Subcommittee on Packaging)
Technical Program Committee, International Microwave Symposium, 1999- 2008, 2011-
Technical Program Committee, Topical Meeting on the Electrical Performance of Electronic Packaging, 1998- 2008
Chair, Topical Meeting on the Electrical Performance of Electronic Packaging 2005
Co-Chair, Topical Meeting on the Electrical Performance of Electronic Packaging 2004
Steering Committee, International Microwave Symposium 2009
Technical Committee - CPMT-12 IEEE Society on Components, Packaging, and
Manufacturing Technology, 1999-2008

Guest Editor, Special Issue of IEEE Transactions on Components, Packaging, and
Manufacturing Technology on Electrical Performance of Electronic Packaging, 2005
Co-Editor of Special Issue on Electrical Performance of Electronic Packaging, Transactions
on Microwave Theory and Techniques, March 2001
Co-Editor of Special Issue on Coplanar Technology, International Journal of RF and
Microwave Computer-Aided Engineering, October 2000
Editorial Board, International Journal of RF and Microwave Computer Aided Engineering
1993 - 2004
Technical Advisory Board, Global Communications Devices, Inc., 2000 - 2003
Electronic Communications Committee, IEEE Microwave Theory and Techniques Society,
1996-1997
Reviewer for: National Science Foundation, IEEE Transactions on Microwave Theory &
Techniques, IEEE Microwave and Guided Wave Letters, Electronics Letters, IEEE
Transactions on Advance Packaging

Journal Publications (student co-authors underlined)

N. Mohammed, R. Wang, R. Jackson, Y. Noh, J. Gummeson, S. I. Lee, "ShaZam: Charge-Free Wearable Devices via Intra-Body Power Transfer from Everyday Objects," [Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies](#), Volume 5, Issue 2, June 2021 Article No.: 75, pp 1–25 <https://doi.org/10.1145/3463505>

R. W. Jackson and G. Chattopadhyay, "Interconnects Over 100 GHz [From the Guest Editors' Desk]," in **IEEE Microwave Magazine**, vol. 21, no. 1, pp. 17-124, Jan. 2020, doi: 10.1109/MMM.2019.2946734.

Polak, A. C., M. Wagner, M. F. Duarte, R. W. Jackson and D. L. Goeckel "Mitigation of Spectral Leakage for Single Carrier, Block-Processing Cognitive Radio Receivers," **Digital Communications and Networks**, Elsevier, Vol. 4. No2, pp 106-110, April 2018.

Jackson, R. W., "Selective Sampling Versus Attenuation for Interference Mitigation in Broadband Receivers," **IEEE Trans. Circuits and Systems II**, Vol. 64, No10, pp1167-1171, 2017.

Jackson, R. W., "Time Selective Sampling Receiver for Interference Rejection," **IEEE Trans. Circuits and Systems II**, Vol. 62, No 7, pp 701-705. 2015.

Sanchez, M. A., R. W. Jackson, S. Frasier "Polarization Correction of Electronically Steered Phased Arrays for Meteorological Radar, " **IEEE Trans. Geoscience and Remote Sensing**, Vol. 50, no 4., pp1283-1290, April 2012.

Sanchez, M. A. Mandeville, and R. W. Jackson, "Compact, Low Cost, Surface Mount, Active Antenna, " **IEEE Trans. Antennas and Propagation Letters**, Vol. 9, pp.1255-1259, December 2010.

Mandeville, A. and R. W. Jackson, "Surface Mount End-Fire Antenna Package," **Electronics Letters**, Vol. 45, No. 7, pp. 340-342, 2009.

Khandelwal, N. and R. W. Jackson, "Active Antenna Module for Low Cost Electronically Scanned Phased Arrays, " **IEEE Trans. Microwave Theory and Techniques**, Vol. 55, No 10, , October 2008.

Jackson, R. W. "Rollet Proviso and the Stability of Linear Microwave Circuits: A Tutorial" **IEEE Trans. Microwave Theory and Techniques, (Invited)**, Vol. 54, No 3, pp 993-1000, March 2006.

Theurer, C. , L. Zhang, D. Kazmer, R. Gao, R. W. Jackson, "Passive Charge Modulation for a Wireless Pressure Sensor", **IEEE Sensors Journal**, Vol. 6, No. 1, pp.47-54, Feb. 2006.

Carrillo, R. and R. W. Jackson, "A Highly Integrated Millimeterwave Active Antenna Array Using BCB and Silicon Substrate," **IEEE Trans. Microwave Theory and Techniques**, Vol. 53, No. 6, pp. 1648-1653, June 2004.

Carrillo, R. and R. W. Jackson, "A Technique for Interconnecting Millimeter Wave Integrated Circuits Using BCB and Bump Bonds," **IEEE Microwave and Wireless Components Letters**, Vol. 13, pp. 196-198, June 2003.

Jackson, R. W., "A Planar Orthomode Transducer," **IEEE Microwave and Wireless Components Letters**, Vol. 11., pp.483-485, December 2001.

Jackson, R. W. and H. Hsu, "Multilayer Elliptic Filter," **Electronics Letters**, Vol. 37, No. 13, pp. 838-839, June 2001.

Wang, Z. and R. W. Jackson, "An Algorithm for Calculating the Coupling Between MMICs with Block Dielectric Coverings," **IEEE Trans. Microwave Theory and Techniques**, Vol. 49, No. 1, pp 133-141, January, 2001.

Jackson, R. W., "Simple Analytical Formulas for the Non-Local Field Generated by Circuit Elements in Multi-Layer Structures," **IEEE Trans. Microwave Theory and Techniques**, Vol. 48, No. 11, pp 1967-1971, November, 2000.

Ito, R., R. W. Jackson, T. Hongsmatip, "Modeling of Electrical Coupling Between Interconnections used in a Multilayered BGA Package," **IEEE Trans. Microwave Theory and Techniques**, pp 1819-1825, September 1999.

Jackson, R.W. and Z. Wang, "Circuit Model for Coupling Between MMICs in Multi-Chip Modules Including resonance Effects," **IEEE Trans. Microwave Theory and Techniques**, Vol. 46, pp 959-964, July 1998.

Jackson, R.W. and S. Rakshit, "Microwave Circuit Modeling of High Lead Count Plastic Packages," **IEEE Trans. Microwave Theory and Techniques**, Vol. 45, pp.1926-1933, October 1997.

Jackson, R.W. and R. Ito, "Microwave Modeling of Flipped Chip Packaging Schemes," **IEEE Trans. Microwave Theory and Techniques**, Vol. 45, pp.1919-1925, October 1997.

Jackson, R.W., "A Circuit Topology for Microwave Modeling of Plastic Surface Mount Packages," **IEEE Trans. Microwave Theory and Techniques**, Vol. 44, pp.1140-1146, July 1996.

Jackson, R.W., "Simple Electromagnetic Model for Determining Resonance Frequencies in Low Cost MMIC Packages," **IEEE Trans. Microwave Theory and Techniques** (special issue on Packaging and Interconnects), Vol. 42, pp.1816-1819, September 1994.

Jackson, R.W., "Circuit Model for Resonance Coupling in Grounded Coplanar Waveguide Circuits," **IEEE Trans. Microwave Theory and Techniques** (special issue on Coplanar MMICs), Vol. 41, pp. 1641-1645, September 1993.

Jackson, R.W., "The Use of Sidewall Images to Compute Package Effects in MoM Analysis of MMIC Circuits," **IEEE Trans. on Microwave Theory and Techniques**, Vol. 41, pp. 406-414, March 1993.

Jackson, R.W., Comment on "Criteria for the Onset of Oscillation in Microwave Circuits," **IEEE Trans. on Microwave Theory and Techniques**, Vol. 40, pg. 1850, September 1992.

Jackson, R.W., "Criteria for the Onset of Oscillation in Microwave Circuits," **IEEE Trans. on Microwave Theory and Techniques**, Vol. 40, pp. 556-568, March 1992.

Svitak, A.J., D.M. Pozar, and R.W. Jackson, "Optically-Fed Aperture-Coupled Microstrip Patch Antennas," **IEEE Trans. on Antennas and Propagation**, Vol. 40, pp. 85-90, January 1992.

Pozar, D.M., R.W. Jackson and A. Svitak, "Microstrip Antennas with Integrated Fibre Optic Feeds," *Electronics Letters*, Vol. 26, pp. 1889-1890, October 1990.

El-Sharawy, E. and R.W. Jackson, "Full-Wave Analysis of an Infinitely Long Magnetic Surface Wave Transducer," **IEEE Trans. on Microwave Theory and Tech.**, Vol. 38, pp. 730-738, June 1990.

El-Sharawy, E. and R.W. Jackson, "Analysis and Design of Microstrip-Slot Line for Phase Shifting Applications," **IEEE Trans. Microwave Theory and Techniques**, Vol. 38, pp. 276-283, March 1990.

Jackson, R. W., "Mode Conversion at Discontinuities in Finite Width Conductor Backed Coplanar Waveguide," **IEEE Trans. Microwave Theory and Techniques**, Vol. MTT-37, pp.1582-1589, October 1989.

Burke, J. J. and R. W. Jackson, "Surface-to-Surface Transition via Electromagnetic Coupling Between Microstrip and Coplanar Waveguide," **IEEE Trans. Microwave Theory and Techniques**, Vol. MTT-37, pp. 519-525, March 1989.

Jackson, R. W., "Full Wave, Finite Element Analysis of Irregular Microstrip Discontinuities," **IEEE Trans. Microwave Theory and Techniques**, Vol. MTT-37, pp. 81-89, January 1989.

El-Sharawy, E., and R. W. Jackson, "Coplanar Waveguide and Slot Line on Magnetic Substrates; Analysis and Experiment," **IEEE Trans. Microwave Theory and Techniques**, Vol. MTT-36, pp. 1071-1079, June 1988.

Jackson, R.W. and D.W. Matolak, "Surface to Surface Transition Via Electromagnetic Coupling of Coplanar Waveguides", **IEEE Trans. Microwave Theory and Techniques**, Vol. MTT-35, pp. 1027-1032, November 1987.

Pozar, D.M. and R.W. Jackson, "An Aperture Coupled Microstrip Antenna with a Proximity Feed on a Perpendicular Substrate", **IEEE Trans. on Antennas and Propagation**, Vol. AP-35, pp. 728-730, June 1987.

Jackson, R.W., "Considerations in the Use of Coplanar Waveguide for Millimeter Wave Integrated Circuits," **IEEE Trans. Microwave Theory and Techniques**, Vol. MTT-34, pp. 1450-1456, December 1986.

Jackson, R.W., "Printed Dipoles Electromagnetically Coupled to Coplanar Waveguide," **Electronics Letters**, Vol. 22, pp. 324-326, March 13, 1986.

Jackson, R.W. and D.M. Pozar, "Full-Wave Analysis of Microstrip Open-End and Gap Discontinuities," **IEEE Trans. Microwave Theory and Techniques**, Vol. MTT-33, pp. 1036-1042, October 1985.

Jackson, R.W., "Second Order Effects Related to a Model for a Parallel Shock," **Journal of Geophysical Research**, pp. 9981-9988, 1983.

Jackson, R.W., "Nonlinear Electrostatic Waves: Oblique Propagation," **J. Plasma Physics**, 26, pp. 399-406, 1981.

Jackson, R.W., "Parametric Instability Due to a Low Frequency Whistler Wave," **Phys. Lett. A**, 77A, pp. 438-440, 1980.

Jackson, R.W. and K. Golden, "Formation of Precursor Whistler Mode Plasma Turbulence in Parallel Shock Waves," **J. Plasma Physics**, 22, pp. 491-497, 1979.

Conference Publications

Sougata Sen, Sunghoon Ivan Lee, Robert Jackson, Rui Wang, Nabil Alshurafa, Josiah Hester, and Jeremy Gummeson. 2020. Towards Battery-Free Body Sensor Networks. In *Proceedings of the 8th International Workshop on Energy Harvesting and Energy-Neutral Sensing Systems (ENSys '20)*. Association for Computing Machinery, New York, NY, USA, 79–81. DOI:<https://doi.org/10.1145/3417308.3430275>

R.W. Jackson, M. Shusta, "Interference rejection by time selective sampling," 2013 European Microwave Conference (*EuMC*), pp573-576, Oct. 2013.

A. C. Polak, M. F. Duarte, R. W. Jackson and D. L. Goeckel, "Recovery of Sparse Signals From Amplitude Limited Sample Sets", IEEE International Conference on Acoustics, Speech and Signal Processing. 2013 ICASSP, pp. 4663-4667 May 2013

E. Seguin, R. Tessier, E. Knapp, and R. W. Jackson, "A Dynamically Reconfigurable Low-Cost Digital Beamforming System," International Conference of Field Programmable Logic and Applications, pp. 1-4, September, 2011

M. Ranjbar, O. Oliaei, and R. Jackson, "A robust STF 6mW CT $\Delta\Sigma$ modulator with 76dB dynamic range and 5MHz bandwidth," in *Custom Integrated Circuits Conference (CICC)*, 2010 IEEE, pp. 1-4, September 2010.

Sanchez, M. and R. W. Jackson, "Low Cost Electronically Scanned Arrays Based on Surface Mount Active Antennas," **International Microwave Symposium** Symposium Digest, pp 684-688. June 2010 (Invited).

Morrison, K., C. Capar, Z. Lai, D. Goeckel, R. W. Jackson, "A Unified Framework for Low-Complexity Ultra-Wideband Signaling," **International Conference on Ultra- Wideband**, 4pp., September 2009.

Sanchez, M. and R. W. Jackson, "Architecture for Low Cost Electronically Steered Phased Arrays," **International Microwave Symposium** Symposium Digest, 4pp. June 2008.

Zhang, Q., D. L. Goeckel, J. Burkhart, B. K. Mui, N. Merrill, M. Carrier, R. W. Jackson, FSR-UWB (TR-UWB without the Delay Element): Effect of Impulse Dithering and Experimental Results," **International Conference on Ultra-Wideband**, 6pp., September 2006.

Iturbide-Sanchez, F., S. C. Reising, and R. W. Jackson, "Fabrication of a Miniaturized Spectrometer Based on MMIC Technology to Retrieve the 3-D Tropospheric Water Vapor Field," **International Microwave Symposium** Digest, 4pp., June 2006

Khandelwal, N., R. W. Jackson, "An X-band System-in-Package Active Antenna Module," **International Microwave Symposium** Digest, 4pp, June 2005

Iturbide-Sanchez, F., S. C. Reising, and R. W. Jackson, "Design and Implementation of a Miniaturized Water Vapor Profiling Radiometer," **Proceedings of the IEEE International Geoscience and Remote Sensing Symposium**, Anchorage, Alaska, 4pp, September 2004.

Reising, S. C., F. Iturbide-Sanchez, S. Padmanabhan, and R. W. Jackson, "Design and Implementation of a Miniaturized Water Vapor Profiling Radiometer," **8th Specialist Meeting on Microwave Radiometry and Remote Sensing Applications**, (MicroRad '04), Rome, Italy, February 2004.

Ito, R. and R. W. Jackson, "Parallel Plate Waveguide with Radiating Slot using Two Dimensional Frequency Domain Transmission Line Matrix Method," **2003 Conference on the Electrical Performance of Electronic Packaging** Proceedings Princeton, October 2003 pp 101-105.

R. Ito and R.W. Jackson, "Electromagnetic modeling of 3D printed circuit board using 2D frequency domain transmission line matrix method," **Digest IEICE** (Institute of Electronics, Information and Communication Engineers, Tokyo, Japan,) MW2003-155, vol.103, No. 288, pp.13-20, Sept. 2003.

Ito, R., R. Carrillo, and R. W. Jackson, "RF Modeling of Vertical Interconnection Between Power-Ground Plane Combined with 2D TLM," **2001 Conference on the Electrical Performance of Electronic Packaging** Proceedings Boston, October 2001 pp 339-343.

Ho, Bin and R. W. Jackson, "Preserving Isolation in Grounded Coplanar Waveguide Circuits Without Via Holes," **2000 Conference on the Electrical Performance of Electronic Packaging** Proceedings Phoenix, October 2000 pp 265-268.

Jackson, R. W. and Z. Wang, "Radiation and Algorithms," *invited paper* for the, **"Workshop on Microwave and Mm-Wave Design Tool Applications for Virtual Prototyping,"** at the IEEE Microwave Theory and Techniques Symposium, June 1999,.

Wang, Z., R. W. Jackson, "Coupling Algorithm for MMICs in Multi-Chip Assemblies with Baffles," **IEEE Microwave Theory and Techniques** Symposium Digest, June 1999,

Ito, R., T. Hongsmatip, and R. W. Jackson, "Electrical Modeling of a BGA Package for Microwave Applications – A Layer by Layer Approach," **1998 Conference on the Electrical Performance of Electronic Packaging** Proceedings West Point, pp.237-241, October 1998.

Jackson, R. W., "Radiative Coupling and Equivalent Sources," *invited paper* for the workshop on, **"Computer Aided Electromagnetic Modeling, and Measurement for Electronics Packaging,"** Baltimore, Maryland, June 1998.

Wang, Z., R. W. Jackson, "A CAD Algorithm for Coupling Between Dielectric Covered MMICs in Multi-Chip Assemblies," **IEEE Microwave Theory and Techniques** Symposium Digest, pp. 33-37, June 1998.

Jackson, R. W., "Modeling of Microwave Packaging Schemes and Comparison to Scale Model Measurements," **National Radio Science Meeting**, January 1998.

Ito, R. and R. W. Jackson, "Circuit Modeling of Isolation in Flip-Chip Microwave Integrated Circuits," **1997 Conference on the Electrical Performance of Electronic Packaging** Proceedings, San Jose., pp.217-220, October 1997.

Jackson, R.W. and Z. Wang, "Circuit Based Model for Coupling Between MMICs in Multi-Chip Assemblies," **IEEE Microwave Theory and Techniques** Symposium Digest, Vol. 3, pp. 1377-1380, June 1997.

Jackson, R.W. and S. Rakshit, "Microwave Modeling of an Elevated Paddle Surface Mount Package," **1996 Conference on the Electrical Performance of Electronic Packaging** Proceedings, Napa Valley, pp.57 - 62, October 1996.

Jackson, R.W., S. Rakshit, and N. King, "Modeling and Application of Plastic Package Surface Mount Packages on Typical PCBs," **1996 Wireless Workshop** Proceedings, Sedona, pp. 81 - 84, September 1996.

Jackson, R.W., "Modeling Millimeterwave IC Behavior for Flipped Chip Mounting Schemes," *invited paper* for the **1996 WRI International Symposium on "Directions for the Next Generation of MMIC Devices and Systems**, N.Y., N.Y., September 1996.

Jackson, R.W., "MMIC Package Resonances: Characteristics, Effects, Remedies," *invited paper* for the **Workshop on Electromagnetic Modeling of Microwave Packages and Interconnects**, Atlanta, June 1993.

Jackson, R.W., "Removing Package Effects from Microstrip Moment Method Calculations," **IEEE Microwave Theory and Techniques** Symposium Digest, Vol. 3, pp. 1225-1228, June 1992.

Jackson, R.W., "Coupling Effects Due to Resonances in Large Millimeter Wave MMIC Packages," *invited paper* for the **Workshop on Loss, Crosstalk, and Package Effects in MICs and MMICs**, Boston, Massachusetts, June 1991.

Burke, J.J. and R.W. Jackson, "A Simple Circuit Model for Resonant Mode Coupling in Packaged MMICs," **IEEE Microwave Theory and Techniques** Symposium Digest, pp. 1221-1224, June 1991.

Burke, J.J. and R.W. Jackson, "Reduction of Parasitic Coupling in Packaged MMIC's," **IEEE Microwave Theory and Techniques** Symposium Digest, pp. 255-258, May 1990.

Jackson, R.W., "Frequency Domain Modeling of MMIC's Including Package Effects," *invited paper* for the **Workshop on New Developments in Numerical Modeling of Microwave and Millimeter Wave Structures**, Dallas, Texas, May 1990.

Jackson, R.W., "Mode Conversion at Discontinuities in Modified Grounded Coplanar Waveguide," **IEEE Microwave Theory and Techniques** Symposium Digest, New York, pp. 203-206, 1988.

Burke, J. J., and R.W. Jackson, "Microwave Interconnects Via Electromagnetic Coupling," presented at the **SPIE Conference Proceedings on "Interconnection of High-Speed and High-Frequency Devices and Systems"**, Newport Beach, pp. 68-74, 1988.

El-Sharawy, E. and R.W. Jackson, "Full Wave Analysis of Slot Line and Coplanar Waveguide on a Magnetic Substrate," **IEEE Microwave Theory and Techniques** Symposium Digest, Las Vegas, pp. 993-996, 1987.

Jackson, R.W., "Coplanar Waveguide vs. Microstrip for Millimeter Wave Integrated Circuits," **IEEE Microwave Theory and Techniques** Symposium, Baltimore, pp. 699-702, 1986. (Received an award for best presentation in session.)

Jackson, R.W. and D.M. Pozar, "Surface Wave Losses at Discontinuities in Millimeter Wave Integrated Transmission Lines," **IEEE Microwave Theory and Techniques Symposium Digest**, St. Louis, pp. 563-565, 1985.