

Jeffrey L. Young

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ADVANCED DEGREES:

- Ph.D., Electrical Engineering with emphasis in electromagnetics and minor in mathematics, 1989, University of Arizona, Tucson, Arizona. Dissertation: *Electromagnetic Response of Thin Wires over an Homogeneous Earth*. Major Professor: James R. Wait.
- M.S., Electrical Engineering with emphasis in circuit theory, 1984, University of Arizona, Tucson, Arizona.
- B.S., Electrical Engineering, 1981, Ohio Northern University, Ada, Ohio.
- Diploma, Manchester High School, 1977, Akron, Ohio.

PROFESSIONAL EXPERIENCE:

Academic Appointments:

- Professor and Head, OSURF Endowed Chair of Engineering, School of Electrical and Computer Engineering, Oklahoma State University, Stillwater, Oklahoma, July 2015 – present
- Adjunct Professor, School of Electrical Engineering and Computer Science, Washington State University, Pullman, Washington, January 2012 – December 2014.
- Emeritus Professor of Electrical and Computer Engineering, University of Idaho, Moscow, Idaho, July 2015 – present.
- Professor of Electrical and Computer Engineering, University of Idaho, Moscow, Idaho, August 2003 – June 2015.
- Associate Professor of Electrical and Computer Engineering, University of Idaho, Moscow, Idaho, August 1996 - 2003.
- Assistant Professor of Electrical and Computer Engineering, University of Idaho, Moscow, Idaho, August 1991 - July 1996.

- Assistant Adjunct Professor of Electrical and Computer Engineering, University of Arizona, Tucson, Arizona, 1990.
- Teaching Assistant, Electrical and Computer Engineering, University of Arizona, 1981-1982.

Non-Academic Employment:

- Engineer, Signatures Department, Code 7260, Carderock Division, Naval Surface Warfare Center, Bayview, Idaho, January 2010 – present.
- Consultant, 1996-present.
- Summer Faculty Research Associate, Air Force Office of Scientific Research, Wright Patterson Air Force Base, Ohio, Summer 1995, 1996, 1998.
- Hughes Aircraft Co.; Member of Technical Staff, 1982-1989; Staff Engineer 1989-1991.

WRITTEN PUBLICATIONS:

Refereed Journal Publications:

[47] S. Ekin, J. F. O'Hara, E. Turgut, N. Colston, and J. L. Young, "A Do It-Yourself (DIY) Light Wave Sensing and Communication Project: Low-Cost, Portable, Effective, and Fun," *IEEE Transactions on Education* (accepted for publication 21 Oct 2020).

[46] J. L. Young, "On the exact mutual reactance of a line source array: a Hilbert transform methodology," *IEEE Transactions on Antennas and Propagation*, vol. 67, no. 3, pp. 1681-1687, 2019.

[45] J. L. Young and C. D. Wilson, "A relationship between total radiated power of difference patterns and sum patterns using variance beamwidth," *IEEE Transactions on Antennas and Propagation*, vol. 66, no. 12, pp. 7359-7362, 2018.

[44] J. L. Young and C. D. Wilson, "The exact radiated power and directivity of a scanning co-linear array," *IEEE Transactions on Antennas and Propagation*, vol. 65, no. 9, pp 4626-4635, 2017.

[43] J. L. Young and C. D. Wilson, "Exact gain-beamwidth product of a line source radiator," *IEEE Transactions on Antennas and Propagation*, vol. 65, no. 6, pp 3214-3216, 2017.

[42] C. D. Wilson and J. L. Young, "The exact radiated power and directivity of a scanning line source radiator," *IEEE Transactions on Antennas and Propagation*, vol. 65, no. 6, pp 2880-2889, 2017.

[41] J. L. Young and C. D. Wilson, "Variance as a proxy for line source beamwidth," *IEEE Transactions on Antennas and Propagation*, vol. 65, no. 3, pp. 1003-1014, 2017.

[40] J. L. Young and C. D. Wilson, "A general theory to determine the exact radiated power, directivity, and radiation resistance of a line source radiator," *IEEE Transactions on Antennas and Propagation*, vol. 64, no. 6, pp. 2283-2292, 2016.

[39] H. R. Tantawy, E. Aston, J. R. Smith and J. L. Young, "Comparison of electromagnetic shielding with polyaniline nanopowders produced in solvent-limited conditions," *ACS Applied Materials and Interfaces*, vol. 5, no. 11, pp. 4648-4658, 2013.

[38] J. R. Smith, H. Dong, J. L. Young and B. Aldecoa, "Optimization of a broadband VHF lumped-element ferrite circulator," *Microwave and Optical Technology Letters*, vol. 55, no. 7, pp. 1476-1481, July 2013.

[37] H. Dong, J. R. Smith and J. L. Young, "A wide-band, high isolation UHF lumped-element ferrite circulator," *IEEE Microwave and Wireless Components Letters*, vol. 23, no. 6, pp. 294-296, June 2013.

[36] J. L. Young and C. L. Wagner, "Roving sources, simulation and reciprocity," *IEEE Transactions on Antennas and Propagation*, vol. 61, no. 6, pp. 3237-3243, June 2013.

[35] H. Dong, J. L. Young, J. R. Smith, and B. Aldecoa, "Maximum bandwidth performance for an ideal lumped-element circulator," *Progress in Electromagnetic Research C*, vol. 33, pp. 213-227, 2012.

[34] C. Blengeri, T. Casad, A. Abburi, D.N. McIlroy, W. Jiang Yeh and J.L. Young, "Fabrication of bulk, self-bias barium ferrites for microwave circulator applications," *Journal of Materials Science and Engineering*, vol. 5, no. 3, pp. 314-318, 2011.

[33] A. Jalloul and J.L. Young, "Singularity evaluation of the straight-wire mixed-potential integral equation in the method of moments procedure," *IEEE Transactions on Antennas and Propagation*, vol. 59, no. 1, pp. 172-179, January 2011.

[32] C.L. Wagner and J.L. Young, "FDTD numerical tests of the convolutional-PML at extremely low frequencies," *IEEE Antennas and Wireless Propagation Letters*, vol. 8, pp. 1398-1401, 2009.

[31] B.K. O'Neil and J.L. Young, "Experimental investigation of a self-biased microstrip circulator," *IEEE Transactions on Microwave Theory and Techniques*, vol. 57, no. 7, pp. 1669-1674, July 2009.

[30] R.S. Adams, B. O'Neil and J.L. Young, "The circulator and antenna as a single integrated system," *IEEE Antennas and Wireless Propagation Letters*, vol. 8, pp. 165-168, 2009.

[29] R.S. Adams, B. O'Neil and J.L. Young, "Integration of a microstrip circulator with planar Yagi antennas of several directors," *IEEE Transactions on Antennas and Propagation*, vol. 56, no. 11, pp. 3426-3432, November 2008.

- [28] B. O'Neil and J.L. Young, "Evaluation of coplanar waveguide-to-microstrip transitions for precision S-parameter measurements," *Microwave and Optical Technology Letters*, vol. 50, no. 10, pp. 2667-2671, October 2008.
- [27] R.S. Adams and J.L. Young "A generalized time-stepping algorithm for electromagnetic wave propagation in ferrite media," *IEEE Transactions on Antennas and Propagation*, vol. 56, no. 10, pp. 3355-3359, October, 2008.
- [26] J.L. Young and R.S. Adams, "On the time integration of Maxwell's equations associated with Debye relaxation processes," *IEEE Transactions on Antennas and Propagation*, vol. 55, no. 8, pp. 2409-2412, August 2007.
- [25] R.S. Adams, J.L. Young and B. O'Neil, "A novel microstrip, rectangular ferrite circulator," *Microwave and Optical Technology Letters*, vol. 49, no. 5, pp. 1036-1039, May 2007.
- [24] J.L. Young, R.S. Adams, B. O'Neil, and C.M. Johnson, "Bandwidth optimization of an integrated microstrip circulator and antenna assembly: Part Two," *IEEE Antennas and Propagation Magazine*, vol. 49, no. 1, pp. 82-91, February 2007.
- [23] J.L. Young, R.S. Adams, B. O'Neil, and C.M. Johnson, "Bandwidth optimization of an integrated microstrip circulator and antenna assembly: Part One," *IEEE Antennas and Propagation Magazine*, vol. 48, no. 6 pp. 47-56, December 2006.
- [22] J.L. Young and R. Adams, "Excitation and detection of waves in the FDTD analysis of N-port networks," *Progress in Electromagnetic Research*, vol. 53, pp. 249-269, 2005.
- [21] J.L. Young and C.M. Johnson, "A compact recursive trans-impedance Green's function for the inhomogeneous, ferrite microwave circulator," *IEEE Transactions on Microwave Theory and Techniques*, vol. 52, no. 7. pp. 1751-1759, July 2004.
- [20] J.L. Young, R.O. Nelson and J.F. Kelly, "RF characterization of electrically small, electro-optical bulk modulators," *Review of Scientific Instruments*, vol. 74, no. 10, pp. 4529-4535, 2003.
- [19] J.L. Young and J.W. Sterbentz, "The circular, homogeneous ferrite, microwave circulator: An asymptotic Green's function and impedance analysis," *IEEE Transactions on Microwave Theory and Techniques*, vol. 51, no. 8, pp. 1939-1945, August 2003.
- [18] D. Sullivan and J.L. Young, "Far-field time-domain calculation from aperture radiators using FDTD method," *IEEE Transactions on Antennas and Propagation*, vol. 49, no. 3, pp. 464-469, March 2001.
- [17] J.L. Young, "High-order, leap-frog methodology for the temporally-dependent Maxwell's equations," *Radio Science*, vol. 36, no. 1, pp. 9-17, 2001.

- [16] J.L. Young and R. Nelson, "A summary and systematic analysis of FDTD algorithms for linearly dispersive media," *IEEE Antennas and Propagation Magazine*, vol. 43, no. 1, pp. 61-77, 2001.
- [15] R.G. Olsen, J.L. Young, and D.C. Chang, (Invited) "Electromagnetic wave propagation on a thin wire above earth," *IEEE Transactions on Antennas and Propagation*, vol. 48, no. 9, pp. 1413-1419, September 2000.
- [14] J.L. Young, R.O. Nelson, and D.V. Gaitonde, "A detailed examination of the finite-volume, time-domain method for Maxwell's equations," *Progress in Electromagnetic Research*, vol. 28, pp. 235-257, 2000. (SCI Entry: *Journal of Electromagnetic Waves and Applications*, vol. 14, no. 6, pp. 765-766, 2000.)
- [13] D.V. Gaitonde, J.S. Shang, and J.L. Young, "Practical aspects of higher-order numerical schemes for wave propagation phenomena," *International Journal for Numerical Methods in Engineering*, vol. 45, pp. 1849-1869, 1999.
- [12] J.F. Nystrom and J.L. Young, "k-space transfer function design of discrete operators: Application to Maxwell's equations," *Journal of Electromagnetic Waves and Applications*, vol. 13, pp. 781-806, 1999.
- [11] J.L. Young, D. Gaitonde, and J.S. Shang, "Toward the construction of a fourth-order difference scheme for transient EM wave simulation: Staggered grid approach," *IEEE Transactions on Antennas and Propagation*, vol. 45, no. 11, pp. 1573-1580, November 1997.
- [10] J.L. Young, "A higher-order FDTD method for EM propagation in a collisionless, cold plasma," *IEEE Transactions on Antennas and Propagation*, vol. 44, no. 9, pp. 1283-1289, September 1996.
- [9] J.L. Young, A. Kittichartphayak, Y.M. Kwok, and D. Sullivan, "On the dispersion errors related to (FD)²TD type schemes," *IEEE Transactions on Microwave Theory and Techniques*, vol. 43, no. 8, pp. 1902-1910, August 1995.
- [8] J.L. Young, "Propagation in linear dispersive media: Finite difference time-domain methodologies," *IEEE Transactions on Antennas and Propagation*, vol. 43, no. 4, pp. 422-426, April 1995.
- [7] J.L. Young, "A full FDTD implementation for radio wave propagation in a plasma," *Radio Science*, vol. 29, no. 6, pp. 1513-1522, 1994.
- [6] J.L. Young and F.P. Brueckner, "A time domain, numerical model of a warm plasma," *Radio Science*, vol. 29, no. 2, pp. 451-464, 1994.

[5] J.L. Young, "TEM coupling between orthogonal thin wires: A closed-form approximation," *IEEE Transactions on Microwave Theory Techniques*, vol. 42, no. 5, pp. 884-890, May 1994.

[4] J.L. Young and J.R. Wait, "Electromagnetic response of two crossing, infinitely long, thin wires," *IEEE Transactions on Antennas and Propagation*, vol. 39, no. 6, pp. 732-739, June 1991.

[3] J.L. Young and J.R. Wait, "Comparison of shielding by infinite and finite parallel grids over a lossy half space," *IEEE Transactions on Electromagnetic Compatibility*, vol. 32, no. 3, pp. 245-248, March 1990.

[2] J.L. Young and J.R. Wait, "Shielding properties of an ensemble of thin, infinitely long, parallel wires over a lossy half space," *IEEE Transactions on Electromagnetic Compatibility*, vol. 31, no. 3, pp. 238-244, March 1989.

[1] J.L. Young and J.R. Wait, "Note on the impedance of a wire grid parallel to a homogeneous interface," *IEEE Transactions on Microwave Theory Techniques*, vol. 37, no. 7, pp. 1136-1138, July 1989.

Fully Edited Book Chapters:

J.L. Young, "Finite-difference, time-domain methodologies for electromagnetic wave propagation in complex media," in *Frontiers in Electromagnetics*, D.H. Werner and R. Mittra, Eds., IEEE Press, Chapter 16, pp. 666-707, 1999.

Peer-Reviewed Conference Papers and Summaries: (Conference publications=23)

C. D. Wilson and J. L. Young, "Application of autocorrelation principles for evaluating the performance of radiating structures comprised of line source radiators," 2017 IEEE Antennas and Propagation Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, San Diego, CA, July 2017.

J. T. Williams, D. A. Hill, and J. L. Young, "James R. Wait: An electromagnetics scholar, a gentleman, and a man of many quests," 2017 IEEE Antennas and Propagation Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, San Diego, CA, July 2017.

C. D. Wilson and J. L. Young, "Application of autocorrelation principles to determine radiated power of a line source radiator with a cosine-on-a-pedestal distribution," 2016 IEEE Antennas and Propagation International Symposium on Antennas and Propagation and USNC/URSI Radio Science Meeting, Puerto Rico, June 2016.

J. L. Young and C. D. Wilson, "An application of Heisenberg's Uncertainty Principle to line source radiation," 2015 IEEE Antennas and Propagation International Symposium on

Antennas and Propagation and USNC/URSI Radio Science Meeting, Vancouver, BC, Canada, July 2015.

J. Young and H. Dong (Invited Keynote Speakers), "Recent advances in bandwidth and isolation enhancement for VHF-UHF lumped-element circulators," 5th IEEE International Symposium on Microwave, Antenna, Propagation, and EMC Technologies for Wireless Communications (MAPE 2013), Chengdu, China, October 2013.

J. L. Young and C. L. Wagner, "Moving sources, FDTD and reciprocity," IEEE Antennas and Propagation International Symposium and USNC/URSI National Radio Science Meeting, Chicago, Illinois, July 2012.

R. T. Rebich, J. L. Young, C. L. Wagner, "Comparison of the up-over-down approximation with the quasi-electrostatic approximation for ELF fields in layered media," , IEEE Antennas and Propagation International Symposium and USNC/URSI National Radio Science Meeting, Spokane, Washington, July 2011.

C. Johnson, C. L. Wagner, R. Rebich, J. L. Young and Das Butherus, "Propagation of Low Frequency Signals in Oceanic Environments; Theory, Simulation and Experimentation," IEEE Antennas and Propagation International Symposium and USNC/URSI National Radio Science Meeting, Spokane, Washington, July 2011.

B. O'Neil and J.L. Young (Invited), "Design of self-biased, wideband circulators for integrated antenna systems," Special Session: Enabling Technology for Multifunctional and Interoperable Communications Systems: Reconfigurable Antennas and RF Front Ends, IEEE Antennas and Propagation International Symposium and USNC/URSI National Radio Science Meeting, San Diego, California, July 2008.

R.S. Adams, J.L. Young and B. O'Neil, "Design of microstrip antenna/ferrite circulator systems," IEEE Antennas and Propagation International Symposium, Honolulu, Hawaii, June 2007.

R.S. Adams and J.L. Young, "The finite difference time domain algorithm applied to ferrite media," IEEE Antennas and Propagation International Symposium, Honolulu, Hawaii, June 2007.

R.S. Adams and J.L. Young, "Integration of a microstrip circulator and antenna assembly," IEEE Antennas and Propagation International Symposium and USNC/URSI National Radio Science Meeting, Albuquerque, New Mexico, July 2006.

J.L. Young and R.S. Adams, "TEM mode excitation and detection in FDTD analysis," IEEE Antennas and Propagation International Symposium and USNC/URSI National Radio Science Meeting, Monterey, California, pp. 603-606, 2004.

D. Sullivan and J. Young, "Far field time domain calculation from aperture radiators using the FDTD method" IEEE Antennas and Propagation Society International

Symposium: Transmitting Waves of Progress to the Next Millennium, Salt Lake City, Utah, pp. 1344-1347, July 2000.

J.L. Young, "The design of high-order, leap-frog integrators for Maxwell's equations," IEEE Antennas and Propagation International Symposium and USNC/URSI National Radio Science Meeting, Orlando, Florida, pp. 176-179, 1999.

J.F. Nystrom and J.L. Young, "k-space transfer function design of discrete operators: Application to Maxwell's time-domain equations," 37th AIAA Aerospace Sciences Meeting and Exhibit, AIAA 99-0337, Reno, Nevada, January 1999.

J.L. Young and J.F. Nystrom, "Designing high-order, time-domain numerical solvers for Maxwell's equations," IEEE International Symposium on Antennas and Propagation, Radio Science Meeting, Atlanta, Georgia, pp. 546-549, 1998.

J.L. Young, D. Gaitonde, and J.S. Shang, (Invited) "A fourth-order compact difference scheme for Maxwell's equations," IEEE International Symposium on Antennas and Propagation, Radio Science Meeting, Montreal, Canada, pp. 1992-1995, 1997.

D. Gaitonde, J.S. Shang, and J.L. Young, "Practical aspects of high-order accurate finite-volume schemes for electromagnetics," 35th Aerospace Sciences Meeting and Exhibit, Reno, Nevada, AIAA 97-0363, 1997.

Y.S. Weber, K. Hill, and J.L. Young, "The application of finite-volume, time-domain techniques to EM scattering from cavities and inlets," 27th AIAA Plasmadynamics and Lasers Conference, New Orleans, Louisiana, AIAA 96-2336, 1996.

J.L. Young, "Second-order and fourth-order difference algorithms for the modeling of electromagnetic wave propagation in temporally dispersive media," 34th Aerospace Sciences Meeting and Exhibit, Reno, Nevada, AIAA 96-0833, 1996.

J.L. Young, A. Kittichartphayak, Y.M. Kwok, and D. Sullivan, "Dispersion analyses of FDTD schemes associated with dispersive media," IEEE International Symposium on Antennas and Propagation, Radio Science Meeting, Newport Beach, California, pp. 216-219, 1995.

J.L. Young, J.B. Schneider, and R.G. Olsen, "Laplace's equation and the measured equation of invariance," COMPUMAG, Miami, Florida, 1993.

J.L. Young and F.P. Brueckner, "A time-domain, weighted residual formulation of Maxwell's equations," 31st AIAA Aerospace Science Meeting, Reno, Nevada, AIAA 93-0462, 1993.

Conference Abstracts: (Conference abstracts=13)

J. L. Young, "Crossing transmission lines on a ferrite substrate: A TEM model," IEEE Antennas and Propagation International Symposium and USNC/URSI Radio Science Meeting, Memphis, Tennessee, July, 2014.

C. L. Wagner and J. L. Young, "Characterizing the convolutional perfectly matched layer at extremely low frequencies," 2010 IEEE International Symposium on Antennas and Propagation and CNC/USNC/URSI Radio Science Meeting, Toronto, Ontario, July 2010.

J.L. Young and C.M. Johnson, "Green's function analysis of an inhomogeneous microstrip circulator," IEEE Antennas and Propagation International Symposium and USNC/URSI Radio Science Meeting, Monterey, California, 2004.

J.L. Young, R. Nelson, and J. Kelly, "Electromagnetic modeling of electrically small electro-optic modulators," IEEE Antennas and Propagation International Symposium and USNC/URSI Radio Science Meeting, San Antonio, Texas, 2002.

R.G. Olsen, J.L. Young, and D.C. Chang, "Electromagnetic wave propagation on a thin wire above earth," International Union of Radio Scientists, Boulder, Colorado, 2000.

J.F. Nystrom and J.L. Young, "High-order, finite difference procedure for the temporally dependent Maxwell's equations," IEEE International Symposium on Antennas and Propagation, Radio Science Meeting, Atlanta, Georgia, 1998.

J.L. Young, "A full FDTD formulation for radio wave propagation in linear dispersive media," IEEE International Symposium on Antennas and Propagation, Radio Science Meeting, Seattle, Washington, 1994.

J.L. Young, "A full FDTD formulation for radio wave propagation in a warm plasma," IEEE International Symposium on Antennas and Propagation, Radio Science Meeting, Seattle, Washington, 1994.

J.L. Young and F.P. Brueckner (Invited), "Characterizing radio wave interactions with ionized fluids using a weighted residual, time-domain method," Progress in Electromagnetic Research Symposium (PIERS), Pasadena, California, 1993.

J.L. Young, J.B. Schneider, and R.G. Olsen, "Theoretical aspects on the measured equation of invariance," IEEE International Symposium on Antennas and Propagation, Radio Science Meeting, Ann Arbor, Michigan, 1993.

J.L. Young, "On the theory of crossing transmission line wires," IEEE International Symposium on Antennas and Propagation, Radio Science Meeting, Chicago, Illinois, 1992.

J.L. Young and J.R. Wait, "Electromagnetic response of two crossing, infinitely long, thin wires," International Union of Radio Scientists, Boulder, Colorado, 1990.

J.L. Young and J.R. Wait, "Shielding properties of an ensemble of parallel wires over a lossy half space," International Union of Radio Scientists, Boulder, Colorado, 1989.

Final Reports Associated with Sponsored Research:

J. L. Young, "Analysis, Design and Fabrication of VHF and UHF Circulators," Office of Naval Research, June 2013.

J. L. Young and C. L. Wagner, "Investigation of ELF Signals Associated with Mine Warfare: A University of Idaho and Acoustic Research Detachment Collaboration, Phase Three," Office of Naval Research, August 2012.

J. L. Young, D. Sullivan, R. G. Olsen and C. L. Wagner, "Investigation of ELF Signals Associated with Mine Warfare: A University of Idaho and Acoustic Research Detachment Collaboration, Phase Two," Office of Naval Research, September 2010.

J. L. Young, D. McIlroy, E.-J. Yeh, "Advanced Microwave Ferrite Research (AMFeR): Phase Four," Office of Naval Research, October 2009.

J. L. Young, D. Sullivan, R. G. Olsen and C. L. Wagner, "Investigation of ELF Signals Associated with Mine Warfare: A University of Idaho and Acoustic Research Detachment Collaboration, Phase One," Office of Naval Research, June 2009.

J.L. Young, "Advanced Microwave Ferrite Research (AMFeR): Phase Three," Office Naval Research, August 2008.

J.L. Young, "94 GHz rect-antenna feasibility study," Jet Propulsion Laboratory, June 2008.

J.L. Young, "Advanced Microwave Ferrite Research (AMFeR): Phase Two," Office Naval Research, December 2006.

J.L. Young, "Advanced Microwave Ferrite Research (AMFeR): Phase One," Office Naval Research, December 2005.

J.L. Young, "Design, analysis and characterization of high-Q, high-L microwave magnetic, thin-film inductors" in "Development of soft magnetic films for thin-film inductors for high-frequency applications," Y.-K. Hong, PI, Office of Naval Research, February 2005.

J.L. Young, "BaFe microwave device design and development" in "Hexaferrite Thick Films for Microwave Monolithic Integrated Circuits (MMIC) Applications," Y.K. Hong, PI, Office of Naval Research, January 2004.

J.L. Young, "BaFe microwave device design and development" in "Development of Hexaferrite Thick Films for MMIC Applications," Y.K. Hong, PI, Office of Naval Research, June 2003.

J.L. Young, "Investigation of the split-ringed optical modulator," Pacific Northwest National Laboratories, Department of Energy, April 2003.

J.L. Young, "Conference: Travel Grant for 2002 IEEE-AP-S International Symposium and USNC/URSI National Radio Science Meeting to be held in San Antonio, Texas, June 16-21, 2002," National Science Foundation, September 2002.

J.L. Young, "Preliminary analysis of wireless communication within biological media," Jet Propulsion Laboratory, June 2002.

J.L. Young, "Development of a characteristic-based finite volume method for patch antennas," DEPSCoR/AFOSR, Contract No. G F49620-96-1-0469, September 1999.

J.L. Young, "A detailed study of the numerical properties of FDTD algorithms for dispersive media," AFOSR Summer Faculty Research Program, Wright Laboratory, Air Force Office of Scientific Research, 1998.

J.L. Young, "Development of a new numerical boundary condition for perfect conductors," AFOSR Summer Faculty Research Program, 1996.

J.L. Young, "A fourth-order, time-domain algorithm for Maxwell's equations," AFOSR Summer Faculty Research Program, Wright Laboratory, Air Force Office of Scientific Research, 1996.

J.L. Young, "A finite volume, time-domain formulation for wide-band RCS prediction," Summer Faculty Research Program, Wright Laboratory, Air Force Office of Scientific Research, 1995.

J.L. Young, "Electromagnetic modeling of ionized media using finite element time-domain techniques," Idaho SBOE Specific Research Grant Program, August 1994.

PROFESSIONAL PRESENTATIONS:

J. L. Young (Keynote Address), "The Transmission of Low Frequency Electromagnetic Field Energy," International Conference on Energy Utilization, Coimbatore, India, January 8, 2018.

J. L. Young, "Ferrites, Circulators, and Nonreciprocal Circuits," Workshop on Emerging Nonreciprocal Technologies for RF Devices and Systems, DARPA-SN-15-73, Washington DC, October 2015.

J. L. Young, "Electromagnetic Wave Research at the University of Idaho," School of Electrical and Computer Engineering, Oklahoma State University, Stillwater, Oklahoma, January 2015.

J. L. Young, "Novel Applications of Microwave Circulators," NASA Jet Propulsion Laboratory, Pasadena, CA, June 10, 2014.

J. L. Young, "Recent Advances in Bandwidth and Isolation Enhancement for VHF-UHF Lumped-Element Circulators," Missouri University of Science and Technology, Rolla, MO, March 31, 2014

J. L. Young, "Recent Advances in Bandwidth and Isolation Enhancement for VHF-UHF Lumped-Element Circulators," University of Colorado, Denver, CO, March 20, 2014

J. L. Young, "Signal Distribution Research 6.1: UHF-VHF Circulators for Military Communications," ONR Program Review Meeting, Arlington, VA, April 2012.

J. L. Young, "Ferrite circulator research at the University of Idaho," Department of Electrical and Computer Engineering, University of Missouri, Columbia, MO, March 2012.

J.L. Young, "Hexaferrite Circulator Analysis and Design: Challenges and Opportunities," Workshop: Current State of Hexaferrite Materials and their Applications, 2011 International Microwave Symposium, Baltimore, MD, June 2011.

J.L. Young, "ONR ELF Modeling and Measurement Program: UI/NAVSEA Collaboration," ONR Program Review Meeting, Bethesda, MD, March 2011.

J. L. Young, "Signal Distribution Research 6.1: UHF-VHF Circulators for Military Communications," ONR Program Review Meeting, San Diego, CA, November 2010.

J. L. Young, "Electromagnetic research at the University of Idaho," University of Houston Engineering Colloquium, Houston, TX, June 2010.

J. L. Young, "Signal Distribution Research 6.1: Analysis, Design and Fabrication of UHF and VHF Circulators," ONR Program Review Meeting, San Diego, CA, March 2009.

B. O'Neil and J.L. Young, "Ferrite microwave circuits and measurements," Department of Electrical and Computer Engineering Research Colloquium, University of Idaho, Moscow, Idaho, February 2008.

J. L. Young, "Ferrite materials for microwave circuit applications and systems," Office of Naval Research Electronic Materials Division Contractors Meeting, Troy, New York, August 2007.

J.L. Young, "Wideband circulator design: Simulation and experiment," Advanced Microwave Ferrite Research Advisory Board Meeting, University of Idaho, Moscow, Idaho, September 2005.

J.L. Young, "Wideband characterization and design of a microwave circulator," University of Colorado, Boulder, Colorado, October 2004.

J.L. Young, "Wideband characterization and design of a microwave circulator," Colorado State University, Fort Collins, Colorado, October 2004.

J.L. Young, "Advanced microwave ferrites," Office of Naval Research, Electronic Materials Division Contractors Meeting, Monterey, California, August 2004.

J.L. Young, "Circulator design, analysis and simulation," Advanced Microwave Ferrite Research Advisory Board Meeting, University of Idaho, Moscow, Idaho, August 2004.

J.L. Young, "Microwave circulators for c-axis hexaferrite films," Office of Naval Research Ferrite Forum, Washington DC, March 2004.

J.L. Young, "Advanced microwave ferrite research at the University of Idaho," Department of Electrical and Computer Engineering Research Colloquium, February 2004.

J.L. Young, "Electromagnetic research at the University of Idaho," Jet Propulsion Laboratory, Pasadena, California, December 2003.

J.L. Young, "Electromagnetic research at the University of Idaho," SPAWAR, Naval Model Range, San Diego, California, August 2003.

J.L. Young, "The design of numerical algorithms for Maxwell's equations," Electrical Engineering Colloquium, University of Idaho, Moscow, Idaho, November 1999.

J.L. Young, "High-order leap-frog methodology for the temporally-dependent Maxwell's equations," Wright Laboratory, Aeromechanics Division, Wright Patterson Air Force Base, Ohio, August 1998.

J.L. Young, "Towards the construction of a fourth-order difference scheme for transient EM wave simulation: Staggered grid approach," Wright Laboratory, Aeromechanics Division, Wright Patterson Air Force Base, Ohio, August 1996.

J.L. Young, "The RCS of a coated sphere: A finite-volume time-domain methodology," The 11th Wright-Patterson Electromagnetic Technical Working Group Meeting, Wright Patterson Air Force Base, Ohio, August 1995.

J.L. Young, "Electromagnetic Research at the University of Idaho," Washington State University, Pullman, Washington, May 1993.

J.L. Young, "Some thoughts on electromagnetics and the computer," Electrical Engineering Colloquium, University of Idaho, Moscow, Idaho, January 1993.

J.L. Young, "Electromagnetic response of two crossing transmission line wires," Washington State University, Pullman, Washington, October 1991.

PATENTS:

J. W. Rockway, K. Moeller and J. L. Young, "Circulator enabled signals eliminator (SENSOR)," # 8285217, October 9, 2012.

J. W. Rockway, J. C. Allen, D. Arceo and J. L. Young, "Delta Circulator Canceller with Increased Isolation," #7816995 B1, October 19, 2010.

J. W. Rockway, J. C. Allen, D. Arceo and J. L. Young, "Broadband Channelized Circulator," #7719384 B1, May 18, 2010.

GRANTS AND CONTRACTS AWARDED:

Externally Funded: (Total Awarded: \$10,161,313; Directly Managed: \$5,224,922)

J.L. Young, "Investigation of ELF Signals Associated with Mine Warfare: A University of Idaho and Acoustic Research Detachment Collaboration, Phase Three," Office of Naval Research, August 1, 2009 – July 31, 2012, \$787,014.

J.L. Young, "Investigation of ELF Signals Associated with Mine Warfare: A University of Idaho and Acoustic Research Detachment Collaboration, Phase Two," Office of Naval Research, August 1, 2008 – July 31, 2009, \$1,018,000.

J. L. Young, "94 GHz Rect-Antenna Feasibility Study," Jet Propulsion Laboratory, February 1, 2008 – May 15, 2008, \$9,000.

J.L. Young, "Analysis, Design and Fabrication of VHF Circulators for the Comb Circulator CLIC/CLAC (BA-C4) Assembly," Office of Naval Research, April 1, 2008 – March 31, 2013, \$614,671.

J.L. Young, "Advanced Microwave Ferrite Research (AMFeR): Phase Four," Office of Naval Research, December 26, 2006 - June 31, 2009, \$875,000 (\$375,998 Funded to J. L. Young).

J.L. Young, "Investigation of ELF Signals Associated with Mine Warfare: A University of Idaho and Acoustic Research Detachment Collaboration, Phase One," Office of Naval Research, January 1, 2007 – March 31, 2007, \$660,000.

J.L. Young, "Advanced Microwave Ferrite Research (AMFeR): Phase Three," Office of Naval Research, February 1, 2006-January 31, 2007, \$1,250,000 (\$336,945 funded to J.L. Young).

J.L. Young, "Advanced Microwave Ferrite Research (AMFeR): Phase Two," Office of Naval Research, March 1, 2005-February 28, 2006, \$1,053,000 (\$397,251 funded to J.L. Young).

J.L. Young, "Advanced Microwave Ferrite Research (AMFeR): Phase One," Office of Naval Research, March 1, 2004-February 28, 2005, \$1,250,000 (\$248,000 funded to J.L. Young).

J.L. Young, "Design, analysis and characterization of high-Q, high-L microwave magnetic, thin-film inductors" in "Development of soft magnetic films for thin-film inductors for high-frequency applications," Y.-K. Hong, PI, Office of Naval Research, September 2003-October 2004, \$750,000 (\$157,766 funded to J.L. Young).

J.L. Young, "BaFe microwave device design and development" in "Hexa-ferrite thick films for microwave monolithic integrated circuits (MMIC) applications," Y.-K. Hong, PI, Office of Naval Research, July 2002-September 2003, \$720,241 (\$139,987 funded to J.L. Young).

J.L. Young, "Conference: Travel Grant for 2002 IEEE-AP-S International Symposium and USNC/URSI National Radio Science Meeting" to be held in San Antonio, Texas, June 16-21, 2002," National Science Foundation, March 2002-March 2003, \$9,975.

J.L. Young, "BaFe microwave device design and development" in "Development of hexa-ferrite thin films for MMIC applications," Y.-K. Hong, PI, Office of Naval Research, April 2001-September 2002, \$747,966 (\$53,869 funded to J.L. Young).

J.L. Young, "Investigation of the split-ringed optical modulator," Pacific Northwest National Laboratories, Department of Energy, March 2001-September 2002, \$55,000.

J.L. Young, "Preliminary analysis of wireless communication within biological media," Jet Propulsion Laboratory, NASA, February 2001-July 2001, \$9,986.

J.L. Young, "Numerical modeling of RF cavities associated with optical modulators," Pacific Northwest National Laboratories, Department of Energy, May 2000-September 2000, \$40,000.

J.L. Young, "Development of a characteristic-based, finite-volume method for patch antennas," Defense Experimental Program to Stimulate Competitive Research, Air Force Office of Scientific Research, July 1996-June 1999, \$261,947.

J.L. Young, "Development of a new numerical boundary condition for perfect conductors," AFOSR Summer Research Extension Program, January 1996-December 1996, \$24,326.

J.L. Young, "Electromagnetic modeling of ionized fluids using finite element, time-domain techniques," Idaho State Board of Education Specific Research Grant Program, July 1993-June 1994, \$25,187.

Internally Funded:

J.L. Young, "Finite difference time domain modeling of electromagnetic waves in linear dispersive media," University Research Office Seed Grant Program, June 1994-May 1995, \$5,456.

J.L. Young, "Modeling of radio waves in ionized media using finite difference methods," Space Engineering Research Center, November 1993-October 1994, \$5,982.

J.L. Young, "Modeling dispersive electromagnetic waves in ionized media using a finite difference time domain method," University Research Office Seed Grant Program, July 1993-June 1994, \$5,880.

J.L. Young, "Travel grant to the Progress in Electromagnetic Research Symposium," Pasadena, California, University Research Office, July 1993, \$800.

J.L. Young, "Modeling of radio waves in ionized media using finite element methods," Space Engineering Research Center, November 1992-October 1993, \$38,600.

J.L. Young, "Electromagnetic modeling of ionized media using finite element time-domain techniques," Idaho Space Grants College and Fellowship Program, October 1992-September 1993, \$4,960.

J.L. Young, "Characterization of transmission line crossovers," Space Engineering Research Center, November 1991-October 1992, \$35,655.

PROFESSIONAL MEMBERSHIPS:

- IEEE (Student Member, 1982-89; Member, 1990-99; Senior Member, 2000-2007; Fellow, 2008-present)
 - IEEE Society of Antennas and Propagation (1989-present)
 - IEEE Society of Microwave Theory and Techniques (1989-present)
 - IEEE Society of Electromagnetic Compatibility (1989-96)
- URSI/USNC, Commission B (Associate Member, 1989-1994; Full Member, 1995-present)
- Professional Engineer, Idaho, 1995-present