

Biographical Sketch for MELINDA PIKET-MAY

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Date of Birth: July 9, 1965
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RESEARCH INTERESTS

Numerical modeling of electromagnetic phenomena: RF, microwave, and optical frequencies: Applications include high-speed digital circuit simulation and packaging, optical devices and interconnects, antennas, electromagnetic compatibility, electromagnetic interference, and interactions with human tissue.

Community Engineering:

Assistive Technology: Designing for the community, multidisciplinary design education through designing client based assistive technology devices

Educational Exhibits: Designing for the community, multidisciplinary design education through designing client based educational exhibits

Engineering Education: interactive/collaborative education, research as education, first-year engineering, K-12 engineering education outreach, engineering recruiting and retention, and assessment of engineering curriculum.

EDUCATION

Northwestern University; Evanston, IL.

Graduate Advisor: Allen Taflove

Ph.D. in Electrical Engineering, December 1993. “Computational EM for High Speed Digital Design”

M.S. in Electrical Engineering, June, 1990. “Computational EM for Biological Applications; Hyperthermia Cancer Treatment & Retinal Rod of Eye”

University of Illinois at Urbana-Champaign; Urbana, Illinois,

B.S. in Electrical Engineering, June 1988.

University of Lancaster; Lancaster, England, Electrical Engineering Exchange, Fall 1985.

RECOGNITION

Selected to join the NRC/NAS Committee on Radio Frequency 2005 - 2008

National Science Foundation CAREER Award 1997-2001

Selected as a Sloan New Faculty Fellow 1997

International Union of Radio Science Young Scientist Award 1996

Elizabeth E. Gee Memorial Lectureship Award for a record of 1) advancing women in academia & community activism; 2) Record of research, teaching, and/or service that pushes the boundaries of disciplinary knowledge and makes connection between disciplines; 3) Significant and original scholarship and/or creative work; 4) Distinguished record in teaching excellence, 2002

Pebbles Teaching Award for “demonstrating a unique commitment to students through innovations in engineering education”, 2000

Helen Plant Award: for Best Non-Traditional Session, “Teaching Creativity”, *IEEE Education society and ASEE Engineering Research Methods society*, 1999

Selected as a Carnegie Academy for the Scholarship of Teaching and Learning (CASTL) Fellow 2001/2002

Selected as the first University of Colorado LEAP fellow as a part of NSF's ADVANCE Institutional Transformation Award: Leadership Education for Advancement and Promotion (LEAP) January 2002.
Selected as an Emerging Leadership Fellow (ELP) for the University of Colorado System 2001/2002
Invited as a visiting fellow in engineering education, Queen's University, Kingston, Ontario
Selected to have biography on National Academy of Engineering "Celebrating Women in Engineering" Web page, November 1998 <http://www.nae.edu/nae/cwe>
Editor's Choice Award for Poem "Memories" in *Touch of Tomorrow*, International Library of Poetry, 2004
Certificate of Appreciation from the Multicultural Engineering Program for "recognition of commitment to the success of students of color at CU-Boulder", 2000
Nominated for the American Council on Education (ACE) Fellow by Chancellor Byyny & President Hoffman and selected as a finalist December 2001
Nominated by the College of Engineering for the inaugural National Academy of Engineering Bernard M. Gordon Prize for Innovation in Engineering and Technology Education, June 2001
Advisor to College of Engineering Outstanding Undergraduate Research Award recipient, Ian Rumsey, 1999
Advisor to College of Engineering Outstanding Undergraduate Research Award recipient, Todd Lammers, 2000
Advisor to Achievement Award for College Scientist (ARCS) scholar; Janice Huang, 1998-2000
Advisor to Achievement Award for College Scientist (ARCS) scholar; Ian Rumsey, 1998-2000
Faculty Advisor for Outstanding Student Chapter of IEEE, May 1996
National TV coverage of CU's assistive technology first-year engineering design course, NBC Nightly News with Jane Pauly; "Compassionate Engineering", December 27, 1995.
Local TV coverage, Channel 4 Nightly News, "Adam's Story" (assistive technology design) 1996.
Numerous Paper/News Articles about the HandiSwing, an assistive technology swing. It was displayed at the natural history museum at the Smithsonian 8/99 and 3/2000.
Various newspaper and magazine coverage of first-year design assistive technology course.
Junior Faculty Development Award 1994
Cabell Fellowship at Northwestern University 1988

PROFESSIONAL SOCIETY RECOGNITION

Elected to Institute of Electronics and Electrical Engineers Antennas and Wave Propagation International *Administrative Council, 1997-2001*
Elected to be a member of the Institute of Electronics and Electrical Engineers (IEEE) Education Division *Administrative Council 2000-2003*
Elected Member at Large of International Union of Radio Science *Administrative Council 1999 - 2001*
Elected to Senior Membership of IEEE, January 1999
Named Associate Editor of IEEE Antennas and Wave Propagation Society Journal, 1998 - 2002
Elected to membership in the International Union of Radio Science (URSI) Commission D(1995) and B(2000)
Elected Secretary of International Union of Radio Science Commission D, January 1999 - 2000
Named General Chair (co-chair James Avery) of ASEE/IEEE "Frontiers in Education" Conference, "Engineering as a Human Endeavor; Partnering Academia, Government, Industry and Community", Nov 2003, 600+ international attendees, budget ~\$400,000
Named IEEE Education Society Program Chair for ASEE/IEEE "Frontiers in Education" Conference 2006
Named editor of the "Perspectives in CEM" column for the Applied Computational Electromagnetics Society Newsletter, 1997-2000
Advisor to and co-author with Andy Byers, Best Paper of Session, *IMAPS Annual Conference 1999*

SELECTED INVITED ACTIVITIES

Keynote speaker at "Self Leadership: Women Succeeding in the Professoriate" A University of Colorado Symposium, February 2003, Denver Campus
Panel participant for "Women Succeeding in Academia" A University of Colorado Symposium 3/04, 3/05
One of 35 faculty nationwide invited to participate in a national planning conference "Liberal Studies and the Integrated Engineering Education of ABET 2000" sponsored by NSF, April 2002

One of 30 faculty nationwide invited to participate in a national discussion / colloquy on “Developing a teaching and learning center in engineering” sponsored by the National Academy of Engineering, January 2002

One of 50 faculty nationwide invited to participate in a national Distance Education Colloquy “Learning Objectives for Engineering Education Laboratories; What Are They?” sponsored by ABET & Alfred P. Sloan Foundation, January 2002

Invited to be a member of the national Future Engineering Education Leadership (FEEL) program 2001

Participant in LANL/LLNL *Conference on High Speed Computing*, Glendon Beach, Oregon, 1993, 1994, 1996, 1998, 1999 (participation by invitation).

Participant in NSF conference *Achieving Success in Academia*, Washington D.C., June 1997, (participation by invitation).

Participant in *National Academy of Engineering Fourth Annual Symposium on Frontiers in Engineering*, Irvine, CA, September 1998, (participation by invitation).

EXPERIENCE

University of Colorado - Boulder; Boulder, CO

Interim Associate Vice Chancellor of Research (8/01 – 8/02): Work with the Vice-Chancellor for Research at CU-Boulder to support campus wide research activities.

Associate Professor (6/2000 - ___): Tenured faculty member in the Electrical and Computer Engineering Department. Research Areas; Computational Electromagnetics, Undergraduate Education and Assessment.

Assistant Professor (8/93 - 6/2000) faculty member in the Electrical and Computer Engineering Department. Research Areas; Computational Electromagnetics, Undergraduate Education and Assessment.

Northwestern University; Evanston, IL (September 1988-July 1993)

Research Assistant: (under Cabell Fellowship) Developed a variety of FD-TD electromagnetic simulation models and techniques for biomedical and circuit applications. Supervised undergraduate research projects.

Cray Research, Inc.; Chippewa Falls, WI/Eagan, MN (Summer 1991-1992, Spring 1993)

Intern: Worked on the Electromagnetic Design System (EMDS). Developed finite-difference time-domain electromagnetic simulation models for complex 3-D structures, including military aircraft, multi-layered circuit board modules, and linear/non-linear digital circuits.

Waubensee Community College; Sugar Grove, IL (August 1990-December 1992)

Mathematics Faculty: Taught courses in the mathematics department.

Naval Research Laboratory; Washington D.C. (July 1989, Sept. 1990)

Engineering Consultant: Developed finite-difference time-domain electromagnetic simulation codes using FORTRAN 90 for applications running on a Connection Machine.

National High School Institute; Northwestern University, IL (July 1990)

Engineering/Science Division Faculty: Taught a summer course in medical instrumentation to high school juniors and seniors. Supervised independent projects.

Fermi National Accelerator Laboratory; Batavia, IL (Summer 1988)

Engineering Intern: Wrote code to control CAMAC data acquisition cards for the superconducting super-collider magnets in the magnet development and test facility.

University of Illinois; Urbana, IL (August 1987-May 1988)

Teaching Assistant: Redesigned and taught a biomedical instrumentation lab in the Electrical Engineering

Department.

Fermi National Accelerator Laboratory; Batavia, IL (August 1984-August 1987)

Co-op Education Engineering Student: (Particle Instrumentation Group) Provided technical support in the design and development of high speed, digital and analog, small signal instrumentation for the front end electronics used in particle accelerator detectors.

BOOK CHAPTERS

1. M. Picket-May and A. Taflove, Chapter 13; “FDTD Modeling of High Speed Digital Circuits” in *Computational Electrodynamics*, Editor: Allen Taflove, Artech House, 1996, pp. 431-474.
2. B. Houshmand, T. Itoh, M. Picket-May, Chapter 8; “High Speed Electronic Circuits with Active and Nonlinear Components” in *Advances in Computational Electrodynamics*, Editor: Allen Taflove, Artech House, 1998, pp. 461-512.
3. M. Picket-May, B. Houshmand, T. Itoh, Chapter 15; “High Speed Electronic Circuits with Active and NonLinear Components” in *Computational Electrodynamics*, Editor: Allen Taflove, Susan Hagness, Artech House, 2000, pp. 703-764.
4. A. Taflove, S. Hagness, M. Picket-May, Chapter 9 in section V; Electromagnetics; “*Computational Electromagnetics: The Finite Difference Time Domain Method*” in *The Electrical Engineering Handbook*, Editor Wai-Kai Chen, Elsevier Academic Press, 2004, pp. 629-670.

PEER REVIEWED JOURNAL PAPERS

1. F. Schlottau, M. Picket-May, and K. Wagner, “Modeling of femtosecond pulse interaction with inhomogeneously broadened media using an iterative predictor corrector FDTD method,” *Optics Express*, vol. 13, pp. 182-194, January 2005.
2. A. Bhoobe, C. L. Holloway, M. Picket-May, R. Hall, ‘Wide-band slot antennas with CPW feed lines: hybrid and log-periodic designs’, *IEEE Transactions on Antennas and Propagation*, vol. 52. pp. 2545-2554, October 2004.
3. S. Staker, C. L. Holloway, A. Bhoobe, M. Picket-May, “Alternating-direction implicit (ADI) formulation of the finite-difference time-domain (FDTD) method: algorithm and material dispersion implementation”, *IEEE Transactions on Electromagnetic Compatibility (special issue on Advanced EMC Numerical Modeling)*, vol. 45, no. 2, pp. 156-166, May 2004.
4. E.F. Kuester, M. A. Mohamed, M. Picket-May, C. L. Holloway, “Averaged transition conditions for electromagnetic fields at a metafilm”, *IEEE Transactions on Antennas and Propagation*, special issue on Metamaterials, vol. 51, pp. 2641-2651, October 2003.
5. P. Fornberg, M. Kanda, C. Lasek, S. Hall, M. Picket-May, “The Impact of a Non-Ideal Return Path on Differential Signal Integrity”, *IEEE Transactions on Electromagnetic Compatibility*, vol. 44, no. 1, pp. 11-15, February 2002.
6. P.A. Vichot, B.E. Grabow, M. Picket-May, “High-speed operation of a low-power 4-bit serial-to-parallel converter”, *IEEE Transactions on Applied Superconductivity*, vol. 12, issue 4, pp. 1891-1896, December 2002.
7. A. Bhoobe, C.L. Holloway, R. Hall, M. Picket-May, “Coplanar waveguide fed wideband slot antenna”, *IEE Electronics Letters*, vol. 36, no. 16, pp. 1340-1342, August 2000.

8. J. Mix, J. Dixon, Z. Popovic, M. Piket-May, "Incorporating non-linear lumped elements in FDTD: the equivalent source method", invited paper, *International Journal of Numerical Modeling; Electronic Networks, Devices and Fields*, vol. 12, pp. 157-170, 1999.
9. A. Byers, S. Hall, M. Piket-May, "Quantifying the impact of a non-ideal return path", invited paper, *International Journal of Microcircuits and Electronic Packaging*, Issue III, vol. 22, no. 3, pp. 262-269, 1999.
10. K. Kelly, M. Piket-May, "Propagation characteristics for a one dimensional grounded finite height finite length electromagnetic crystal", *Journal of Lightwave Technology*, vol. 17, no. 11, pp. 2008-2012, November 1999.
11. I. Rumsey, P. Kelly, M. Piket-May, "Photonic bandgap structures used as filters in microstrip circuits", *IEEE Microwave Guided Waves and Letters*, vol. 8, no. 10, pp. 336-338, 1998.
12. C. Reuter, A. Taflove, V. Sathiaselvan, M. Piket-May, B. Mittal, "Unexpected physical phenomena indicated by FDTD modeling of the Sigma-60 deep hyperthermia applicator", *IEEE Transactions on Microwave Theory and Technique* vol. 46, pp. 313-319, April 1998.
13. R. Gravrok, A. Byers, M. Piket-May, "Extraction of 3-D power distribution inductance from numerical field data", *International Journal on Microcircuits and Electronic Packaging (IMAPS)*, vol. 21, no. 1, pp. 85-91, 1998.
14. M. Piket-May, B. Sopori, "Numerical model of light-trapping in solar cells", invited technical feature paper, *Applied Computational Electromagnetics*, vol. 13, no. 2, pp. 13-18, 1998.
15. P. Vichot, Z. Schoenborn, J. Mix, J. Dunn, and M. Piket-May, "Numerical modeling of a clock distribution network for a superconducting multichip module", *IEEE Transactions on Components, Packaging and Manufacturing, Technology, Part B: Advanced Packaging*, vol.21, no.1, pp. 98-104, February 1998.
16. K. Thomas, R. Gravrok, G. Haussmann, M. Piket-May, "Implementation and application of a FD-TD simulation tool for the analysis of complex 3D structures", invited paper, to *Applied Computational Electromagnetics Society Journal, Special Issue on Computational Electromagnetics*, vol. 13, no. 2, pp. 160-167, 1998.
17. S. Sheppard, R. Jenison, A. Agogino, M. Brereton, L. Bucciarelli, J. Demel, C. Dym, D. Evans, R. Faste, M. Henderson, P. Minderman, J. Mitchell, A. Oladipupo, M. Piket-May, R. Quinn, T. Regan, J. Wujeket, "Examples of Freshman Design Education", *International Journal of Engineering Education*, vol. 13, no. 4, pp. 248-261, 1997.
18. T. Marshall, M. Piket-May, "Finite-Difference Time-Domain modeling of light trapping in solar cells", *Applied Computational Electromagnetics Society Journal*, vol. 12, pp. 31-42, November 1997.
19. M. Hadi, M. Piket-May, "A modified FDTD 2,4 scheme for modeling electrically large structures with high phase accuracy", *IEEE Transactions on Antennas and Wave Propagation*, vol. 45, pp. 254-264, February 1997.
20. M. Piket-May, A. Taflove, J. Baron, "FD-TD modeling of digital signal propagation in 3-D circuits with active and passive loads", *IEEE Transactions on Microwave Theory and Technique*, vol.42, pp. 1514-1523, August 1994.
21. V. Thomas, M. Jones, M. Piket-May, A. Taflove, E. Harrigan, "The use of SPICE lumped circuits as sub-grid models for FD-TD analysis", *IEEE Microwave Guided Wave Letters*, vol. 4, pp. 141-143, July 1994.
22. M. Piket-May, A. Taflove, J. Troy, "Electrodynamics of visible light interactions with the vertebrate retinal

rod”, *Optics Letters*, vol. 18, pp. 568-570, 1993.

23. V. Sathiaselalan, A. Taflove, M. Piket-May, C. Reuter, B. Mittal, “Application of numerical modeling techniques in electromagnetic hyperthermia”, *Journal of Applied Computational Electromagnetics Society*, vol. 7, pp. 61-71, 1992.
24. M. Piket-May, A. Taflove, W. Lin, D. Katz, V. Sathiaselalan, B. Mittal, “Computational modeling of electromagnetic hyperthermia: three-dimensional and patient-specific”, *IEEE Transactions on Biomedical Engineering*, vol. 39, pp. 226-237, 1992.
25. D. Katz, M. Piket-May, A. Taflove, and K. Umashankar, “FD-TD analysis of electromagnetic wave radiation from systems containing horn antennas”, *IEEE Transactions on Antennas and Wave Propagation*, vol. 39, pp. 1203-1212, 1991.

PEER REVIEWED CONFERENCE PAPERS

1. C. Reuter, V. Sathiaselalan, M. Piket-May, A. Taflove, “Deep Heating Characteristics of an EM Annular Phased Array Hyperthermia Applicator”, *International Conference of the IEEE Engineering in Medicine and Biology Society*, vol. 12, no. 2, pp. 980-981, Orlando, FL, November 1991.
2. C. Reuter, V. Sathiaselalan, M. Piket-May, A. Taflove, “Unexpected Whispering Gallery Effect of the BSD-2000 Annular Phased Array”, *International Conference of the IEEE Engineering in Medicine and Biology Society*, v13, n 2, pp. 995-996, Orlando, FL, November 1991.
3. W.P. Pala, A. Taflove, M. Piket, R. Joseph, “Parallel finite difference-time domain calculations”, *Proceedings of the IEE International Conference on Computation in Electromagnetics*, pp. 83-85, UK, 1992.
4. C. Reuter, E. Thiele, M. Piket-May, A. Taflove, A. Fenn, “Linear superposition of phased array antenna near field patterns using the FDTD method”, *10th Annual Review of Progress in Applied Computational Electromagnetics Society Conference*, pp. 459-466, Monterey, CA, March 1994.
5. C. Reuter, M. Piket-May, A. Taflove, “Pattern synthesis of phased array antennas using linear superposition of the FD-TD simulated fields”, *Proceedings of the Applied Computational Electromagnetics Society Conference*, pp. 767-774, Monterey, CA, March 1995.
6. M. Hadi, M. Piket-May, “Using the integral forms of Maxwell’s equations to modify and improve the FDTD (2,4) Scheme”, *Progress in Applied Computational Electromagnetics Annual Review*, vol. 2, pp. 767-774, Monterey, CA, March 1995.
7. M. Piket-May, J. Avery, L. Carlson, “A multidisciplinary, hands-on introduction to engineering through a community/university collaboration in assistive technology”, *Proceedings of American Society for Engineering Education Conference*, vol. 2, pp. 2363-2366, Los Angeles, CA, June 1995.
8. R. Gravrok, M. Piket-May, K. Thomas, “LC: an integrated methodology to model and visualize the complex electrostatics of 3D structures”, *Proceedings of the 3rd Topical Meeting on Electrical Performance of Electronic Packaging*, pp. 73-76, Portland, OR, November 1995.
9. M. Hadi, M. Piket-May, E. Thiele “A modified FDTD 2,4 scheme for modeling electrically large structures with high phase accuracy”, *Progress in Applied Computational Electromagnetics Annual Review*, vol. 2, pp. 1023-1030, Monterey, CA, March 1996.
10. M. Piket-May, E. Thiele, G. Hausmann, R. Gravrok, “A powerful EM analysis tool based on the FDTD simulation method”, *Symposium on Antenna Technology and Applied Electromagnetics 1996 Conference Proceedings*, pp. 309-311, Montreal, Canada, August 1996.

11. M. Piket-May, J. Avery, "Freshman design projects: a university/community program providing assistive technology devices", *Proceedings of Frontiers in Education Conference*, vol. 2, pp. 926-929, Salt Lake City, UT, November 1996.
12. P. Vichot, E. Thiele, J. Dunn, M. Piket-May, "Numerical modeling of a clock distribution network for a superconducting multichip module", *Proceedings of the 4th Topical Meeting on Electrical Performance of Electronic Packaging*, , pp. 43-46, Napa Valley, CA November 1996.
13. T. Marshall, M. Piket-May, "Numerical modeling of light-trapping in solar cells", *Progress in Applied Computational Electromagnetics Annual Review*, pp. 1163-1167, Monterey, CA, March 1997.
14. P. Vichot, J. Mix, Z. Schoenborn, J. Dunn, M. Piket-May, "Numerical modeling of a clock distribution network for a superconducting multichip module", *Progress in Applied Computational Electromagnetics Annual Review*, pp. 1168-1173, Monterey, CA, March 1997.
15. G. Haussmann, M. Piket-May, "Modified FDTD M(2,4) scheme in 3D", *Progress in Applied Computational Electromagnetics Annual Review*, pp. 82-89, Monterey, CA, March 1997.
16. J. Dunn, P. Vichot, M. Piket-May, J. Mix, "Clock design and analysis for a superconductive crossbar switch", *47th Annual IEEE/EIA Electronics Components and Technology Conference Proceedings*, pp. 1094-1099, San Jose, CA, May 1997.
17. R. Brown, P. Ensaf, T. Marshall, Z. Popovic, M. Piket-May, "Printed microwave couplers with thermal isolation", *1997 IEEE MTT-S International Microwave Symposium Digest*, vol. 2, pp. 983-986, Denver, CO, June 1997.
18. R. Gravrok, A. Byers, M. Piket-May, "Numerical modeling of inductance for a distributed system", *Proceedings of the IEEE 6th Topical Meeting on Electrical Performance of Electronic Packaging (EPEP)*, pp. 83-86, San Jose, CA, October 1997.
19. M. Piket-May, K. Thomas, R. Gravrok, "Packaging and interconnect design and analysis using FDTD", *Proceedings of the IEEE 6th Topical Meeting on Electrical Performance of Electronic Packaging (EPEP)*, pp. 87-90, San Jose, CA, October 1997.
20. M. Piket-May, J. Avery, "Results of client-based freshman design projects", *Proceedings of the 1997 IEEE Frontiers in Education Conference*, vol. 2, pp. 634-637, Pittsburgh, PA, November 1997.
21. M. Piket-May, "Facilitating learning: believe in your students", *Proceedings of the 1997 IEEE Frontiers in Education Conference*, vol. 3, pp. 1481-1484, Pittsburgh, PA, November 1997.
22. A. Byers., B. Boots, R. Gravrok, M. Piket-May, "Extraction of effective capacitance and inductance of a power distribution structure from numerical field data", (invited) *Applied Computational Electromagnetics Symposium Proceedings*, vol. 2, pp.687-694, Monterey, CA, March 1998.
23. G. Haussmann, M. Piket-May, "Uniaxial PML implementation for a fourth order dispersion optimized FDTD Scheme", *Applied Computational Electromagnetics Symposium Proceedings*, vol. 1, pp.531-536, Monterey, CA, March 1998.
24. G. Haussmann, M. Piket-May, K. Thomas, "Modifying a graphically based FDTD simulation for parallel processing", (invited) *Applied Computational Electromagnetics Symposium Proceedings*, vol. 1, pp. 113-120, Monterey, CA, March 1998.
25. M. Piket-May, J. Avery, "University/Community outreach in assistive technology", CD and Web *Proceedings of Technology and Persons with Disabilities Conference*, 4 pages, Los Angeles, CA, 1998

http://www.csun.edu/cod/conf/1998/proceedings/csun98_148.htm.

26. G. Haussmann, M. Piket-May, "Modeling interface discontinuities and boundary conditions for a dispersion optimized finite difference time domain method", *Proceedings of the 1998 IEEE Antenna Propagation Society Symposium*, vol. 4, pp. 1820-1825, Atlanta, GA, June 1998.
27. P. Kelly, L. Diaz, M. Piket-May, I. Rumsey, "Scan blindness mitigation using photonic bandgap structure in phased arrays", *1998 Proceedings of International Symposium on Optical Science, Engineering and Instrumentation*, Society for Optical Engineering, pp. 239-248, San Diego, CA, July 1998.
28. M. Piket-May, G. Haussmann, K. Thomas, J. Mix, "EMC/EMI design and analysis using FDTD", (invited paper), *1998 IEEE Electromagnetic Compatibility Society Conference Proceedings*, vol. 1, pp. 177-181, Denver, CO, August 1998.
29. Piket-May, M., K. Thomas, R. Gravrok, "Numerical Modeling of packaging effects using the finite-difference time domain technique", (invited paper) *Proceedings of the IEEE 7th Topical Meeting on Electrical Performance of Electronic Packaging (EPEP)*, pp. 264-266, West Point, NY, October 1998.
30. J. Chang, M. Piket-May, J. P. Avery, "Using active student feedback in the learning environment", *Proceedings of the 1998 IEEE Frontiers in Education Conference*, vol. 2, pp. 643-646, 1998.
31. M. Piket-May, J. Chang, J. P. Avery, "Understanding what success means in assessment", *1998 Proceedings of the 1998 IEEE Frontiers in Education Conference*, vol. 1, pp. 20-22, 1998.
32. J. P. Avery, M. Piket-May, J. Chang, L. Carlson, J. Sullivan, S. Davis, "Integrated teaching and learning lab", *Proceedings of the 1998 IEEE Frontiers in Education Conference*, vol. 2, pp. 932-936, 1998.
33. I. Rumsey, J. Mix, M. Piket-May, "Methods for including lumped elements in FDTD simulations", *Applied Computational Electromagnetics Symposium Proceedings*, vol. 1, pp. 12-15, Monterey, CA., March 1999.
34. A. Byers, M. Piket-May, S. Hall, "Quantifying the impact of non-ideal ground return path", (best paper of session), *IMAPS Annual Conference Proceedings*, vol. 3830, pp. 305-310, 1999.
35. I. Rumsey, J. Mix, M. Piket-May, "Using combined SPICE-FDTD simulation to model high-speed systems", *IMAPS Annual Conference Proceedings*, vol. 3830, pp. 322-326, 1999.
36. P. Vichot, B. Grabow, J. Clatterbaugh, M. Piket-May, "Electrical design of an MCM for a 2.5Gbps network switch", *IMAPS Annual Conference Proceedings*, vol. 3830, pp. 332-338, 1999.
37. J. Chang, M. Piket-May, J. P. Avery, "Providing student opportunities that also help you succeed" *1999 ASEE Conference Proceedings*, pp. 4083-4088, June 1999.
38. I. Rumsey, M. Piket-May, "Application of the finite difference time domain (FDTD) method to a challenging real world EMC problem", (invited paper), *1999 IEEE Electromagnetic Compatibility Society Conference Proceedings*, vol. 2, pp. 679-683, August 1999.
39. I. Rumsey, A. Byers, M. Piket-May, "Digital filtering embedded in a finite-difference time-domain (FDTD) code", (invited paper), *Proceedings of the International Conference on Electromagnetics in Advanced Applications (ICEAA99)*, pp. 669-672, Torino, Italy, September 1999.
40. L. Carlson, J. Sullivan, S. Poole, M. Piket-May, "Engineers as entrepreneurs: invention and innovation in design and build courses", *Proceedings of Frontiers in Education*, vol. 1, pp. 4-7, November 1999.
41. I. Rumsey, M. Piket-May, "Hybrid FDTD-frequency dependent network simulations using digital filtering

- techniques”, (invited paper), *Applied Computational Electromagnetics Symposium*, vol. 2, pp. 988-994 Monterey, CA, March 2000.
42. T. Lammers, S. Staker, M. Piket-May, “Systematic Studies in Annular Ring PBG structures”, *Applied Computational Electromagnetics Symposium*, vol. 1, pp. 160-165, Monterey, CA, March 2000.
 43. M. Piket-May, J. P. Avery, “Teaching Design using Assistive Technology Projects”, *NCIIA Symposium; CULTIVATING INNOVATION: Creativity & Technical Entrepreneurship in Higher Education*, Washington, DC, March 9-11th, 2000.
 44. A. Byers, I. Rumsey, M. Piket-May, Z. Popovic, “Surface-wave guiding using periodic structures “, *IEEE AP-S Symposium/URSI Radio Science Symposium*, vol. 1, pp. 342-345, Salt Lake City, UT, July 2000.
 45. A. Bhobe, M. Piket-May, C. Holloway, “CPW fed wide-band hybrid slot antenna”, *IEEE AP-S Symposium/URSI Radio Science Meeting*, vol. 2, pp. 636-639, Salt Lake City, UT, July 2000.
 46. D. F. Williams, A. Byers, V. C. Tyree, D. K. Walker, J. J. Ou, J. Xiaodong, M. Piket-May, Chenming Hu, “Contact-pad design for high-frequency silicon measurements”, *IEEE 9th Topical Meeting on Electrical Performance of Electronic Packaging*, pp. 131-134, 2000.
 47. A. Byers, P. Fornberg, M. Piket-May, C. Holloway, “FDTD modeling of printed circuit board integrity and radiation”, (invited paper), *2000 IEEE Electromagnetic Compatibility Society Conference Proceedings*, vol. 1, pp. 307-312, August 2000.
 48. M. Piket-May, J. P. Avery, “First year students can do E-Teams”, *NCIIA Symposium; CULTIVATING INNOVATION: Creativity & Technical Entrepreneurship in Higher Education*, www.nciia.net/proceed_01/Piket-May%20materials.pdf, 10 pages, Washington, DC, March 2001.
 49. H. Jordan, S. Bokhari, S. Staker, J. Sauer, M. ElHelbawy, M. Piket-May, “Experience with ADI-FDTD techniques on the Cray MTA supercomputer source”, *Proceedings of the SPIE - The International Society for Optical Engineering*, vol. 4528, pp. 68-76, 2001.
 50. A. Bhobe, C. Holloway, M. Piket-May, “Meander delay line challenge problem: a comparison using FDTD, FEM and MoM”, (invited paper), *2001 IEEE Electromagnetic Compatibility Society Conference Proceedings*, vol. 2, pp. 805-810, August 2001.
 51. S. Harmon, A. Byers, M. Piket-May, “Comparison of numerical modeling methods, FDTD and TLM “, (invited paper), *2001 IEEE Electromagnetic Compatibility Society Conference Proceedings*, vol. 2, pp. 1316-1321, August 2001.
 52. M. Piket-May, J. P. Avery, “Service learning retention results”, *Proceedings of Frontiers in Education*, pp. 19-22, Reno, NV, November 2001.
 53. M. Piket-May, J. P. Avery, “The art of teaching engineering”, *Proceedings of Frontiers in Education*, pp. 649 - 650, Savannah, GA, November 2004.
 54. J. P. Avery, M. Piket-May, “FIE2003 assessment results”, *Proceedings of Frontiers in Education*, pp. 1429 - 1430, Savannah, GA, November 2004.

PEER REVIEWED CONFERENCE PRESENTATIONS

1. M. Piket-May, Lee, V. Sathiaseelan, A. Taflove, B. Mittal “A System for Automated Reconstruction of 3-D Anatomical Structures from CT Data for Hyperthermia Treatment Planning Applications”, *Radiation Research Society/North American Hyperthermia Group Meeting*, New Orleans, LA, April 1990.

2. M. Piket-May, V. Sathiaselalan, A. Taflove, B. Mittal “Computational Modeling of Electromagnetic Hyperthermia: Three-Dimensional and Patient-Specific”, *Radiation Research Society/North American Hyperthermia Group Meeting*, New Orleans, LA, April 1990.
3. M. Piket-May, J. Troy, A. Taflove, “Optical Interactions with the Human Retinal Rod: a Computational Electromagnetics Model”, *IEEE AP-S Symposium/URSI Radio Science Meeting*, Dallas, TX, May 1990.
4. M. Piket-May, V. Sathiaselalan, A. Taflove, B. Mittal “Computational Modeling of Electromagnetic Hyperthermia: Three-Dimensional and Patient-Specific”, *IEEE AP-S Symposium/URSI Radio Science Meeting*, Dallas, TX, May 1990.
5. E. Thiele, M. Piket-May, A. Taflove, “FD-TD Analysis of Vivaldi Flared Horn Antennas”, *IEEE AP-S Symposium/URSI Radio Science Meeting*, London, Ontario, Canada, June 1991.
6. M. Piket-May, A. Taflove, V. Sathiaselalan, “FD-TD Computational Modeling of Electromagnetic Hyperthermia”, *Proceedings of Progress in Electromagnetics Symposium*, p.113, Cambridge, MA, July 1991.
7. C. Reuter, V. Sathiaselalan, M. Piket-May, A. Taflove, “Strategies for Improving Sigma-60 Hyperthermia Applicator Performance”, *Radiation Research Society/ North American Hyperthermia Group Meeting*, Tucson, AZ, April 1992.
8. C. Reuter, V. Sathiaselalan, M. Piket-May, A. Taflove, “Numerical Convergence Issues in FD-TD Modeling of Sigma-60 Deep Hyperthermia Applicator”, *Radiation Research Society/ North American Hyperthermia Group Meeting*, Tucson, AZ, April 1992.
9. M. Piket-May, A. Taflove, “First-Principles Supercomputing Simulation of Crosstalk in High Speed Digital Interconnects”, p.451, *Proceedings of IEEE AP-S Symposium/URSI Radio Science Meeting*, Chicago, IL, July 1992.
10. E. Thiele, M. Piket-May, A. Taflove, “FDTD Analysis of Vivaldi Flared Horn Antennas”, p.77, *Proceedings of IEEE AP-S Symposium/URSI Radio Science Meeting*, Chicago, IL, July 1992.
11. V. Sathiaselalan, B. Mittal, C. Reuter, M. Piket-May, A. Taflove, “Absorbed Power Distribution Predictions for Superficial Electromagnetic Hyperthermia”, p.539, *Proceedings of IEEE AP-S Symposium/URSI Radio Science Meeting*, Chicago, IL, July 1992.
12. C. Reuter, M. Piket-May, A. Taflove, V. Sathiaselalan, B. Mittal, “Numerical Convergence Properties of 2-D FD-TD Models of the Sigma-60 Hyperthermia Applicator”, p.540, *Proceedings of IEEE AP-S Symposium/URSI Radio Science Meeting*, Chicago, IL, July 1992.
13. M. Piket-May, “Computational Modeling of Digital Signal Propagation in 3-D Circuits with Active and Passive Loads”, (Sponsored by Lawrence Livermore National Laboratory and Los Alamos National Laboratory - one of four students nationwide to be invited.) *Salishan Conference on High Speed Computing*, Gleneden Beach, Oregon, March 1993.
14. M. Piket-May, J. Baron, A. Taflove, “FD-TD Modeling of Digital Signal Propagation in 3D Microstrip Circuits with Passive and Active Loads”, *IEEE AP-S Symposium/URSI Radio Science Meeting*, Ann Arbor, MI, June 1993.
15. D. Katz, M. Piket-May, A. Taflove, “FD-TD Modeling of Electrically Large 3D Structures with Cray EMDS Software Package”, *IEEE AP-S Symposium/URSI Radio Science Meeting*, Ann Arbor, MI, June 1993.
16. M. Piket-May, J. Baron, A. Taflove, “FD-TD Modeling of Digital Signal Propagation in 3D Microstrip Circuits with Passive and Active Loads”, *Proceedings of Progress in Electromagnetics Research Symposium*,

p.31, Pasadena, CA, July 1993.

17. D. Katz, M. Picket-May, A. Taflove, "FD-TD Modeling of Electrically Large 3D Structures with Cray EMDS Software Package", *Proceedings of Progress in Electromagnetics Symposium*, p.895, Pasadena, CA, July 1993.
18. A. Taflove, M. Picket-May, M. Jones, and V. Thomas, "FD-TD Supercomputing Computational Electromagnetics Analysis of High-Speed Microcircuit Modules", (invited presentation) *Government Microcircuit Applications Conference (GOMAC)*, New Orleans, LA, November 1993.
19. M. Picket-May, K. Thomas, "Automated FD-TD Modeling for Parameter Extraction", *Proceedings of the National Radio Science Meeting*, Boulder, Colorado, January 1994.
20. M. Picket-May, "FD-TD Supercomputing Computational EM for Dual Use Electronics and Optical Technology", (invited presentation) *IEEE AP-S Symposium/URSI Radio Science Meeting*, Seattle, WA, June 1994.
21. E. Thiele, M. Picket-May, A. Taflove, "FD-TD Computation of Active Impedance of an Array of Vivaldi Quad Elements", *IEEE AP-S Symposium/URSI Radio Science Meeting*, Seattle, WA, June 1994.
22. C. Reuter, M. Picket-May, A. Taflove, "Pattern Synthesis of Phased Array Antennas Using Linear Superposition of the FD-TD Simulated Fields", *IEEE AP-S Symposium/URSI Radio Science Meeting*, Seattle, WA, June 1994.
23. J. Mix, M. Picket-May, "Automated FD-TD Modeling for Parameter Extraction", *Proceedings of the National Radio Science Meeting*, Boulder, Colorado, January 1995.
24. M. Hadi, M. Picket-May, "Modified FDTD 2,4 Scheme", *Proceedings of the Applied Computational Electromagnetics Society Conference*, Monterey, CA, March 1995.
25. J. Mix, M. Picket-May, K. Thomas, "LC; An Electromagnetics FDTD Simulation Tool", *IEEE AP-S Symposium/URSI Radio Science Meeting*, Long Beach, CA, June 1995.
26. M. Hadi, M. Picket-May, "Phase Accuracy in the Modified FDTD 2,4 Scheme", *IEEE AP-S Symposium/URSI Radio Science Meeting*, Long Beach, CA, June 1995.
27. P. Vichot, M. Picket-May, A. Taflove, "FDTD Modeling of Complex Interconnects", (invited presentation) *Proceedings of the Progress in Electromagnetics Research Conference*, Seattle, WA, July 1995.
28. R. Joseph, M. Picket-May, A. Taflove, "Progress in FDTD Modeling of High Frequency Electronic and Micro-Optical Devices", (invited presentation), *Proceedings of the Progress in Electromagnetics Research Conference*, Seattle, WA, July 1995.
29. P. Vichot, M. Picket-May, A. Taflove, "Microwave Circuit Analysis Using FD-TD", (invited presentation) *Proceedings of the Progress in Electromagnetics Research Conference*, Seattle, WA, July 1995.
30. M. Picket-May, J. Dunn, E. Thiele, Z. Schoenborn, P. Vichot, "Numerical Modeling of MultiChip Modules", *URSI Radio Science Meeting*, Boulder, CO, January 1996.
31. M. Picket-May, E. Thiele, G. Haussmann, J. Mix, "FDTD Modeling of EM Packaging Effects", *URSI Radio Science Meeting*, Boulder, CO, January 1996.
32. M. Hadi, M. Picket-May, E. Thiele, "Modeling Wave Propagation through a Building Using the Hybrid M24, S22 FDTD Algorithm", *URSI Radio Science Meeting*, Boulder, CO, January 1996.

33. P. Vichot, Z. Schoenborn, E. Thiele, J. Dunn, M. Piket-May, "Numerical Modeling of Multi-Chip Modules", *IEEE AP-S International Symposium and URSI Radio Science Meeting*, Baltimore, MD, July 1996.
34. J. Mix, G. Haussmann, M. Piket-May, "FDTD Modeling of Electromagnetic Packaging Effects", *IEEE AP-S International Symposium and URSI Radio Science Meeting*, Baltimore, MD, July 1996.
35. M. Hadi, G. Haussmann, M. Piket-May, "Modeling Wave Propagation Through a Building Using the Hybrid M24/S22 FDTD Algorithm", *IEEE AP-S International Symposium and URSI Radio Science Meeting*, Baltimore, MD, July 1996.
36. M. Piket-May, "New Developments with the Finite-Difference Time Domain Method", (invited presentation), International Union of Radio Science: XXVth General Assembly, Lille, France, August 1996.
37. G. Haussmann, M. Piket-May, "Derivation and Verification of Dispersion Optimized Fourth Order FDTD Method", p.310, *Proceedings of the IEEE Antenna Propagation Society Symposium*, Montreal, Canada, July 1997.
38. M. Piket-May, J. P. Avery, L. Carlson, J. Sullivan, "Integrated Teaching and Learning Lab", 90-minute invited presentation, *National Science Foundation Teaching and Technology Conference*, Golden, CO, July 1997.
39. M. Piket-May, J. P. Avery, "Designing for the Community", (invited presentation), *1997 Annual Conference of the Rocky Mountain American Society of Engineering Educators*, Logan, UT, August, 1997.
40. J. P. Avery, M. Piket-May, "Integrated Teaching and Learning", (invited presentation), *1997 Annual Conference of the Rocky Mountain American Society of Engineering Educators*, Logan, UT, August 1997.
41. M. Piket-May, "Learning Interactively: Electromagnetics Case Study", on CD-ROM, Session F2I, *Proceedings of the 1997 IEEE Frontiers in Education Conference*, Pittsburgh, PA, November 1997.
42. J. P. Avery, M. Piket-May, J. Sullivan, L. Carlson, "Initial Results Teaching and Learning the Integrated Teaching and Learning Lab", on CD-ROM, Session S3F, *Proceedings of the 1997 IEEE Frontiers in Education Conference*, Pittsburgh, PA, November 1997.
43. K. Kelly., M. Piket-May, I. Rumsey, "Investigation of a Novel Technique for Increasing the Bandwidth of the Conventional Microstrip Patch Antennas", Session B-1, p. 10, *Proceedings of the National Radio Science Meeting*, Boulder, CO, January 1998.
44. G. Haussmann, M. Piket-May, "A Uniaxial Perfectly Matched Layer Implementation for Higher Order FDTD Simulations", (invited presentation) Session B-2, p. 126, *Proceedings of the National Radio Science Meeting*, Boulder, CO, January 1998.
45. B. Boots, M. Piket-May, R. Gravrok, A. Byers, "Extraction of Power Distribution Inductance and Capacitance from Numerical Field Data", Session B-7, p. 312, *Proceedings of the National Radio Science Meeting*, Boulder, CO, January 1998.
46. G. Haussmann, M. Piket-May, "Analysis of Electrically Large Structures with a Dispersion-Optimized Finite-Difference Time-Domain Method", *The Eighth Biennial IEEE Conference on Electromagnetic Field Computation*, 1998 IEEE Magnetics Society Conference, Tucson, AZ, June 1998.
47. K. Kelly, M. Piket-May, "Photonic Band Gap Structures for Antennas", *1998 IEEE Antenna Propagation Society Conference and URSI North American Radio Science Meeting*, Atlanta, GA, June 1998.
48. J. Mix, J. Dixon, Z. Popovic, M. Piket-May, "Nonlinear FDTD Modeling of Transistors", *1998 IEEE Antenna*

Propagation Society Conference and URSI North American Radio Science Meeting, Atlanta, GA, June 1998.

49. I. Rumsey, K. Kelly, A. Byers, M. Niyompong, M. Picket-May, “Characterizing Photonic BandGap Microstrips and Striplines”, *1998 IEEE Antenna Propagation Society Conference*, Atlanta, GA, June 1998.
50. A. Byers, S. Hall, M. Picket-May, “Non-Ideal Ground Return Path Measurements and Modeling” *Proceedings of the National Academies of Sciences and Engineering Radio Science Meeting*, 117, Boulder, CO, January 1999.
51. P. Kelly, T. Lammers, M. Picket-May, “Investigation of Surface Wave Mitigation using Photonic Bandgap Substrates”, *Proceedings of the National Academies of Sciences and Engineering Radio Science Meeting*, 215, Boulder, CO, January 1999.
52. I. Rumsey, J. Mix, M. Picket-May, “Integrating Lumped Circuit Models into FDTD Simulations”, *Proceedings of the National Academies of Sciences and Engineering Radio Science Meeting*, 254, Boulder, CO, January 1999.
53. A. Bhohe, M. Picket-May, “Circularly Polarized CPW Fed Slot Antenna”, *Proceedings of the National Academies of Sciences and Engineering Radio Science Meeting*, 292, Boulder, CO, January 1999.
54. A. Bhohe, M. Haeusler, K. C. Gupta, M. Picket-May, “Design of a Wideband CPW Fed Slot Antenna”, *Proceedings of the National Academies of Sciences and Engineering Radio Science Meeting*, 293, Boulder, CO, January 1999.
55. I. Rumsey, T. Lammers, M. Picket-May, “Microstrip and Stripline Design for Novel Structures”, *Proceedings of the National Academies of Sciences and Engineering Radio Science Meeting*, 298, Boulder, CO, January 1999.
56. P. Kelly, T. Lammers, I. Rumsey, M. Picket-May, S. Hagness, “Computational Analysis of Photonic Bandgap Substrates”, *Workshop on Electromagnetic Crystal Structures, Design, Synthesis, and Application, Photonic Bandgap Structures*, Poster ThU20, LA, CA, January 1999.
57. P. Kelly, M. Picket-May, S. Hagness, “Band Diagram for a Grounded Periodic Dielectric Substrate with Square Lattice and Finite Height”, *1999 IEEE Antenna Propagation Society Conference*, July, Orlando, FL, 1999.
58. M. Picket-May, V. Thomas, R. Gravrok, “High Speed Packaging Design and Analysis”, *1999 IEEE Antenna Propagation Society Conference*, July, Orlando, FL, 1999.
59. P. Kelly, M. Picket-May, S. Hagness, “Surface Wave Analysis for Periodic Structures”, *1999 URSI General Assembly*, August, Toronto, Canada, 1999.
60. I. Rumsey, A. Byers, J. Mix., M. Picket-May, “FDTD Interfaces for High Speed Circuit Design”, (invited paper), *1999 URSI General Assembly*, August, Toronto, Canada, 1999.
61. A. Byers, M. Picket-May, S. Hall, “Packaging Effects on Signal Integrity”, (invited paper), *1999 URSI General Assembly*, August, Toronto, Canada, 1999.
62. K. Y. Sung., M. K. Ah Yo, T. Lammers, A. Byers, M. Picket-May, W. Shiroma, “Planar Photonic Bandgap Structures for Coplanar Waveguide “, *1999 URSI General Assembly*, August, Toronto, Canada, 1999.
63. J. Mix, J. Dixon, M. Picket-May, “FDTD Analysis of an Active Antenna Using a Nonlinear Transistor Model”, *1999 URSI General Assembly*, August, Toronto, Canada, 1999.

64. A. Bhobe, M. Picket-May, C. Holloway, “CPW fed Log-Periodic Slot Antenna”, *1999 URSI General Assembly*, August, Toronto, Canada 1999.
65. A. Byers, P. Fornberg, M. Picket-May, “New Developments in Understanding Non-Ideal Return Paths”, *National Academies of Sciences and Engineering Radio Science Meeting*, Boulder, CO, January 2000.
66. I. Rumsey, A. Holley, M. Picket-May, “ Digital Filtering Techniques used to Include Multiport Devices in FDTD Simulations”, *National Academies of Sciences and Engineering Radio Science Meeting*, Boulder, CO, January 2000.
67. T. Lammers, A. Holley, J. Huang, M. Picket-May, “Novel Designs using Frequency Selective Surfaces”, *National Academies of Sciences and Engineering Radio Science Meeting*, Boulder, CO, January 2000.
68. A. Taflove, S. Hagness, M. Picket-May, “Advances in FDTD” (invited paper), *IEEE AP-S Symposium/URSI Radio Science Meeting*, Salt Lake City, UT, July 2000.
69. M. Picket-May, J. Chang, “Experiential Engineering Education”, *Progress in Electromagnetics Research Conference (PIERS)*, Boston, MA, July 2000.
70. I. Rumsey, M. Picket-May, “Hybrid FDTD-Frequency Dependent Network Simulations using Digital Filtering Techniques”, *Progress in Electromagnetics Research Conference (PIERS)*, Boston, MA, July 2000.
71. P. Kelly, T. Kutumbos, A. Byers, I. Rumsey, T. Lammers, J. Huang, S. Hagness and M. Picket-May, “Photonic Bandgap Studies for Finite Structures”, *Progress in Electromagnetics Research Conference (PIERS)*, Boston, MA, July 2000.
72. M. Picket-May, A. Taflove, S. Hagness, “Advances in FDTD”, (invited day-long workshop), *United Kingdom Applied Computational Electromagnetics Symposium*, London, England, December 2000.
73. S. Staker, M. Picket-May, C. Holloway, “An Algorithm Study of the Alternating Direction Implicit (ADI) FDTD Technique”, *National Academies of Sciences and Engineering Radio Science Meeting*, Boulder, CO, January 2001.
74. P. Fornberg, A. Byers, S. Harmon, M. Picket-May, “FDTD Modeling of Printed Circuit Board Signal Integrity and Radiation”, *National Academies of Sciences and Engineering Radio Science Meeting*, Boulder, CO, January 2001.
75. S. Staker, M. Picket-May, C. Holloway, “Alternating Direction Implicit (ADI) FDTD Technique”, *IEEE AP-S Symposium/URSI Radio Science Meeting*, Boston, MA, July 2001.
76. I. Rumsey, M. Picket-May, “Hybrid FDTD-Frequency Domain Simulations using Digital Filtering Techniques”, *IEEE AP-S Symposium/URSI Radio Science Meeting*, Boston, MA, July 2001.
77. M. Elhelbawy, M. Picket-May, H. Jordon, “ A Performance Study of the Alternating Direction Implicit (ADI) FDTD Technique”, *IEEE AP-S Symposium/URSI Radio Science Meeting*, Boston, MA, July 2001.

COURSES

GEEN1400 First Year Projects - 3 hours (Fall 1994 - ongoing) A design section for the first year projects course that is a part of the Integrated Teaching and Learning Lab Program. My section topic is service learning, often in the area of assistive technology. The student teams do an open ended project for a specific client in our local community who has an assistive technology need. We also do community outreach to zoos, museums and classrooms.

ECEN1400 ECE Freshman Seminar - 1 hour. Developed and taught this introduction to Electrical Engineering seminar (Fall 1994). The course has had great reviews from the students and is now offered every fall by the chair of the department.

ECEN3400 Electromagnetic Fields and Waves - 5 hours. This is a core class in electromagnetics. It has a 3-hour lecture, 2-hour recitation, and 2-hour lab each week. I teach the traditional material in a collaborative style. In addition students wrote reports and observations about electromagnetics in addition to the tradition problems solving work. Students also have to do an open ended design project at the end of the semester, pushing their knowledge of EM beyond that of the basic material. Students do in class presentations and write up a final report.

ECEN3410 Electromagnetic Waves and Transmission - 3 hours. Traditional information is experienced in an active learning classroom. The students work in teams and collaborative learning exercises are used to enhance the student's absorption of the material. Students write observations about EM and do a final open-ended design project using LC, an FDTD EM simulation tool. Students do in class presentations and write up a final report (in the form of a journal paper) for their projects.

ECEN3030 Circuits for Non-majors – 3 hours. Essentials of Electrical and Computer Engineering.

ECEN 4024/5024 Special Topics: Time Domain Numerical Techniques. - 3 hours. Theoretical development of the Finite Difference Time Domain Technique and open ended design projects using FDTD for a practical problem.

ECEN 4004/5004 Special Topics: Computational Engineering - 3 hours. A hands on computer simulation class that looks at real world simulation problems in electromagnetics. Students do open-ended design projects.

ECEN 4024/5024 Special Topics: High Speed Digital Design - 3 hours. High Speed Digital Design (HSDD) from a practical standpoint. Students learn basic theory of HSDD, monitor the Signal Integrity industrial list, and do open ended projects using computational design tools (HFSS, LC, MDS).

ECEN4024/5024 Special Topics: High Speed Packaging – 3 hours. High speed packaging from a practical standpoint. High speed systems must be packaged to obtain a robust final design. Mechanical and electrical concepts are taught in relation to each other.

ECEN4004/5004 Fundamentals of Microsystems Packaging - 3 hours. We cover IC packaging to system board packaging, packing assembly and variations inbetween. We include microelectronics, photonics, RF and MEMS at a packaging level.

PHYS 7810-002 CIRTL: 1-hour Center for integration, research teaching and learning. This a national graduate web class. I worked with the CU students on the CIRTL pillars: Teaching as Research, Learning Communities, and Learning through Diversity.

GRADUATE STUDENTS

1. Mohammed Hadi (PhD May 1996), PhD Dissertation: “Modeling Long Distance Propagation using a 2D Modified (2,4) FD-TD Scheme” ; Professor at the University of Kuwait
2. Linden McClure (PhD May 1996), PhD Dissertation: “Distribution and Automation Technology Advancement for Spacecraft Mission Operations”; principal engineer in the Workstation Global Business Unit of HP
3. Chris Jones (MS EE 1996), Research: “Modeling Material Parameters using FD-TD”; Engineer at National Institute of Standards and Technology: Electromagnetic Fields Division “Modeling Material Parameters using

FD-TD”

4. Gary Haussmann (MS EE 1995, PhD May 1998), PhD Dissertation “ Modeling Long Distance Propagation using a 3D Modified (2,4) FD-TD scheme “; EMC Engineer Silicon Graphics, MountainView, California, Cray Research Intern (Summer 1995, Summer 1997)
5. Todd Marshall (MS Thesis EE December 1996) MS Thesis “Numerical Models of Light Trapping in Solar Cells”; National Renewable Energy Lab (NREL) Research Assistant (1995); Continued on for a PhD with Zoya Popovic in Antenna Design
6. Jason Mix (MS Thesis EE June 1995, PhD January 1999), Design Engineer at Intel, Cray Research Intern (Summer 1994), Motorola Intern (Summer 1995), Intel Intern (Summer/Fall 1997) “Modeling High Speed Phenomena using FD-TD”
7. Zale Schoenborn (MS Thesis EE December 1996), Design Engineer at Intel, “Computational EM modeling of High Speed Digital Design for MCM's”
8. David Smith (MS Thesis EE Dec 95), Continuing on for a PhD in Remote Sensing at CU, “A Sub-Band Transient Detection System”
9. Keith Kelly (PhD Aug 2000), Engineer at Ball Aerospace, Research Area: Microwave Photonic Band Gap Structures;
10. Bryan Boots (MS May 1999) Engineer at Ansoft, Intern at Ball; Summer 1999, Intern at Cray Research; Summer 1998, Research Area: Power/Ground Design for High Speed Systems
11. Ted Brannan (MS EE May 1999) FDTD modeling for Optical Resonators
12. Andrew Byers (MS Thesis May 2000) MS Thesis: “High Speed Digital Design”, Signal Integrity Engineer at Textronix, Intern at Intel, Summer 1998, 99
13. Shawn Staker (MS Thesis August 2000) MS Thesis: “Higher Order FDTD Schemes”; Lincoln Lab (2000-2002) , PhD Program at MIT (2002-)
14. Pelle Fornberg (MS Thesis December 2001) MS Thesis: “Electromagnetic Simulation Studies for High Speed Digital Design” ; Engineer at Intel
15. Billy Mansour (MS May 2002) High Speed Interconnects; Engineer at Pico-second
16. Steve Hall (MS May 2002) High Speed Interconnects; Engineer at Pico-second
17. Paul Vichot (MS EE May 1995 PhD May 2002) PhD Dissertation: “Development of a Giga-Bit-Per-Second Superconducting Serial-Parallel Converter for use in Switching and Demultiplexing Applications” ; Engineer at Applied Physics Lab
18. Ian Rumsey (MS Thesis EE May 1999, PhD May 2002) MS Thesis: “The Finite-Difference Time-Domain Method Applied to Microwave and High Speed Circuits”; PhD Dissertation: “Antenna Design with PBG substrates ; Hybrid FDTD / S-parameter” ; Engineer at Ball Aerospace, Intern at Ball Aerospace (Summer 1998)
19. Sirichia Kungswai (MS Thesis May 2002) MS Thesis: “High Speed Packaging”
20. Todd Lammers (MS Thesis June 2003) MS Thesis: “High Speed Routing EM Simulation”

21. Alpesh Bhoje (MS EE December 1999, PhD December 2003) PhD Dissertation: “ADI Finite Difference Time Domain Methods for Anechoic Chambers”; Post-Doc at NIST (2003 – 2005), Engineer at Tektronix
22. Mohamed Mohamed (PhD June 2004) PhD Dissertation: “Theoretical Meta Material Design”
23. Mona Elhelbawy (PhD May2005) PhD Dissertation: “3-D Cylindrical ADI FDTD Method”; Engineer at NTIA

UNDERGRADUATE RESEARCH STUDENTS

Sean Mc Devitt: FDTD

Ashish Babalni: FDTD

Chris Lasek ; *Photonic Bandgap Structures,*

Scott Harmon ; *EMC for Networking with Cisco*

Asa Holley ; *FDTD/S-parameter Study*

Jennifer Masini ; *General Electromagnetics/ Web development/Coding, MEMS*

Janice Huang; *3D Electromagnetic Interactions with the Human Retinal Rod, Photonic Band Gap Structures, biomed studies*

Todd Lammers ; *Photonic Band Gap Structures*

Ted Kutrumbos ; *Photonic Bandgap Structures for RF Applications & EMC for Networking with Cisco*

Ted Brannan; *Designing Optical Resonators with FDTD/ High Performance Computing*

Pelle Fornberg; *High Speed Digital Design with Intel*

David Schmeltzer; *High Speed Interconnect Design with Kyocera*

Billy Mansour; *EE MEMS Design*

Tom Hamilton ; *EE MEMS Design*

Mike Niyompong; *Photonic Bandgap Structures / Neural Nets*

Lindsay Wanner; *Co-Planar Photonic Bandgap Structures*

Matt Larson; *Coplanar Waveguides*

Andy Byers ; *High Speed Design*

Bryan Boots; *Power/Ground Systems for High Speed Design*

Ian Rumsey; *Photonic Bandgap Structures*

David Dunshee; *SPICE/FD-TD Interface*

Darrell Barnhart; *Macro Parameter Characterization of Complex High Speed Structures*

Jody Matsushima; *SPICE/ FD-TD Interface*

Curtis Nottberg; *Supercomputer Simulations*

PROFESSIONAL ACTIVITIES and DEVELOPMENT

Member of the Boulder Faculty Assembly

Member of the Boulder Faculty Assembly Budget and Planning Committee

Member of the System Faculty Assembly committee on Women

Member of the Chancellors Committee on Women

Mentoring a National Science Foundation (NSF) Post Doctorate Fellow in Math, Engineering, and Technology Education (PSFMETE) : Researcher (Julie Chang) 1/1998-12/1999

Mentoring National Science Foundation GK-12 Fellows,

- Student funded with full RA, performs 20 hours a week of outreach in the
- Boulder High School Honors Physics Program (Alex Settle) 8/1999-5/2000
- Casey Middle School Science (Sharon Perez Suarez) 8/2000 – 8/2001
- Casey Middle School Science (Jennifer Kellogg) 8/2000 – 7/2001
- Casey Middle School Science (Jessa Ellenburg) 8/2001 – 6/2002
- Casey Middle School Science (HP Marshall) 8/2001 – 6/2002

Member of IEEE

- Antennas and Wave Propagation Society
 - administrative council member 1997-2000
 - APS representative to Society for Sociological Impact of Technology
 - APS Education Committee
- Microwave Theories and Techniques Society
- Electromagnetic Compatibility Society
- Components Manufacturing and Packaging Technology Society
- Education Society
 - administrative council member January 2001-

Denver Section Chair for IEEE APS/MTT/IGARSS chapter 2000

Faculty Advisor for IEEE student group, Boulder, CO

Member of American Society of Engineering Education

Member of Applied Computational Electromagnetics Society

Member of NSF CampMODE Research Center

Participant in *Honors Seminar on Teaching and Learning*, Boulder, CO, Fall 1994, (participation by invitation).

Participant in *Teaching and Technology Conference*, Golden, CO, 1996, 1997, 1998.

Participant in North Carolina's Center for Success in the First Year Seminar on *First Year Students and Success*, Denver, CO, 1997.

Participant in National Center for Innovation and Invention in Academia *Teaching Creativity Conference*, June 1998.

Review papers for

- IEEE Antennas and Wave Propagation Society
- IEEE Microwave Theories and Techniques Society
- IEEE Electromagnetic Compatibility Society
- IEEE Components Manufacturing and Packaging Technology Society, Part B
- IEEE Education Society
- American Society of Engineering Education Journal
- Applied Computational Electromagnetics Society Journal
- International Journal of Numerical Modeling; Electronic Networks, Devices and Fields

- Physics Review

Funding Agency Reviews

- National Science Foundation Technical Review panels
- National Science Foundation Educational Review panels
- National Center for Innovation and Invention in Academia (NCIIA) Review panels

Editorial Work

- Associate Editor for IEEE Antennas and Wave Propagation Society Journal (1997-2002)
- Newsletter Editor of *Perspectives in Electromagnetics* for Applied Computational Electromagnetics Society

Selected Conference Activities

Program Chair for IEEE Education FIE 2006 San Diego

Co-General Chair for Frontiers in Engineering Education 2003, Boulder, CO

Technical Program Chair for Frontiers in Education 2006, IEEE Education Society Representative

Moderator of conference session for Colorado Advanced Software Institute (CASI), Fall 1994

Organized and Chaired Sessions at the National Radio Science Institute conference, January , 1995, 1996, 1998, 1999, 2000 Boulder, CO

Organized and Chaired sessions at Applied Computational Electromagnetics Society Annual Conference, March, 1996, 1997, 1998, 2000 Monterey, CA

Organized and Chaired sessions at the IEEE Antennas and Wave Propagation Annual Conferences, 1994, 1998, 1999

Chaired technical session for the International National Radio Science Institute General Assembly, Lille, France, August 1996

On the Organizing Committee for *The Eighth Biennial IEEE Conference on Electromagnetic Field Computation*, Tucson, Arizona, June 1998.

Chaired technical session for the International Conference on Electromagnetics in Advanced Applications, Torino, Italy, September 1999

Technical Program Committee for National Radio Science Institute 2000 conference

Chaired Session “A College Based Program for Enhancing Teaching and Learning” at Frontiers in Education Conference 1999, 10-13 November, Puerto Rico

Judge for the “Helen Dryer Best Paper Award” at Frontiers in Education Conference 1999

Judge for “Helen Plant Award” for Frontiers in Education Conference 2000-2003

Panel Speaker for Women Succeeding in Academia Symposia, 2004, 2005

Other Selected Presentations

Invited Technical Presentations to local IEEE APS/MTT section 1993, 1998.

Presenter at the Rocky Mountain Technology Exposition, Spring 1994.

Invited speaker to Sigma Xi, *High Speed Digital Design*, Spring 1994.

Presenter at ECE and College of Engineering External Advisory Board Meetings, 1995- ongoing.

Invited speaker to Cray User Group Conference, *Ground Rule Design*, summer 1995.

Speaker at CAMPMODE Center Industrial Advisory Board meeting,

EM Modeling of Multichip Modules 1995, 1996.

Speaker at the Developmental Disabilities Center, *Client Based Freshman Design*, 1996.

Computational Electromagnetics Research talks to various undergraduate and graduate courses

Selected University of Colorado Activities

Dean’s Committee on Strategic Prioritization, College of Engineering, 1995

Dean’s Committee on Multidisciplinary Education, College of Engineering, 1996

Dean's Committee on Strategic Planning, 1999 – 2000
Diversity Planning Committee, College of Engineering, 1994
Member of the Integrated Teaching and Learning Lab Task Force; 1994 - 1999
Member of Assessment Committee for Integrated Teaching and Learning Lab; 1994-2001
Sometimes participate in High School Honors Institute, Engineering Open House, and Engineering Career Day for High School Women
Speaker for University of Colorado's Faculty Teaching Excellence Program (FTEP) Seminars
University of Colorado Speakers Bureau; talks to local K-12 Schools on "Understanding Engineering"
Member of Information Technology and Social Science Research Group, 1996
Faculty Advisor to IEEE student chapter, 1996/97
Women in Engineering, Faculty Advisory Board, 1997 - ongoing
Co-developer and facilitator for the minority *Success Institute*, 1998

DIRECT FUNDING (~ \$1,000,000 direct cost funding)

National Science Foundation

MetaMaterials

10/05 – 9/08, \$270,000

PI Ed Kuester

Department of Defense

Superconducting Multichip Module

1/95 – 6/99, \$365,000

ARPA Device Optimization Program

Subcontract from Cray Research

Full Wave Analysis of Electromagnetics Fields

1/94 – 12/95, \$100,000

National Science Foundation CAREER Award

Computational Electromagnetic Studies of High Speed Design

6/97 – 5/01, \$210,000

Research Experience for Undergraduates

6/97 – 5/01, \$40,000

NSF CAREER Industrial Matching from Intel Contract

1/99 – 5/01, \$75,000

Intel

High Speed Design for Printed Circuit Boards

1/99 – 12/01, \$105,000

Kyocera through CampMODE

Design of High Speed Connectors for Kyocera

9/99 – 5/01, \$130,000

Cisco

High Speed Design for EMC of Printed Circuit Boards

10/00 – 10/02, \$60,000

JPL Director's Discretionary Funds Award

Miniature High Frequency Electronic Packaging Technology

10/94 – 6/95, \$10,000

ROME Air Force Research Lab

Electromagnetic Electromigration Study
8/95 – 6/96, \$20,000

NSF Academic Research Infrastructure Program

Instrumentation for Wireless Multi-Media High-Speed Communications
Co-PI's; Popovic; Picket-May, Varenasi, Mathys
6/96 – 5/97, \$500,000 total, Picket-May \$50,000

University of Colorado through CampMODE

Design of transmission Line MicroElectroMechanical Systems for Undergraduate Labs
9/99 – 5/00, \$10,000

Council on Research and Creative Work Award, University of Colorado

Full Wave Analysis of EM Fields for High Speed Design
8/94 – 7/95, \$5,000

University of Colorado MIMICAD Center

Signal Integrity Study
8/94 – 7/95 \$5,000

University of Colorado Undergraduate Research Opportunity

High Speed Interconnect Design
8/94 – 6/95, \$1,500

Hughes Undergraduate Biomedical Initiative

Hyperthermia Studies Using FDTD, EM Studies of the Human Retinal Rod
8/94 – 6/95, \$4,000

Integrated Teaching and Learning Lab, University of Colorado

First Year Engineering Design Projects Curriculum Development
6/95 – 8/96 \$14,166

University of Colorado Service Learning Grant

Support for Community Outreach in Assistive Technology
3/00 – 6/01, \$1,000
Co-PI, James Avery

National Center for Innovation and Invention in Academia

First Year Engineering Design Curriculum Development
Co-PI; J. Avery
9/98 – 8/99, \$2,000

National Center for Innovation and Invention in Academia

First Year Engineering Design Swing Project Commercialization
9/98 – 8/99, \$10,500

University of Colorado Undergraduate Excellence Fund

Introduction to Academia; A Retention Program for First Year Engineers
6/96 – 8/96, \$9,000

IN-KIND FUNDING

Cray Research Computational Electromagnetics Research Cray Supercomputer Accounts for Picket-May and all students 1993 - 2001, Estimated value over \$500,000/yr

Intel donated \$7,000 worth of PC's to my research group 10/99

Intel donated \$10,000 worth of PC's to my research group 3/2000

Silicon Graphics donated 4 workstations (~\$45,000) to my research group 1/2000