# MELINDA PIKET-MAY
# Curriculum Vitae


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## RESEARCH INTERESTS

***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.

***Community Engineering:***
Designing for the community, multidisciplinary design education through designing client based assistive technology devices and educational exhibits. Diversity initiatives. First Generation initiatives.

***Numerical modeling of electromagnetic phenomena at 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.

## EDUCATION

**Northwestern University;** Evanston, IL

**Ph.D.** in Electrical Engineering "Computational Electromagnetics for High Speed Digital Design" Fall 1993.

**M.S.** in Electrical Engineering "Computational Electromagnetics for Biological Applications; Hyperthermia Cancer Treatment & Study of the Retinal Rod of the Eye" June, 1990.

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

**B.S.** in Electrical Engineering, Biomedical Engineering track, June 1988.

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

## EXPERIENCE

**University of Colorado - Boulder;** Boulder, CO

Associate Professor (6/2000 -) Assistant Professor (8/1993 – 5/2000): Tenured faculty member in the Electrical, Computer and Energy Engineering Department. Research Areas; Computational Electromagnetics, Undergraduate Education and Assessment, Assistive Technology.

Interim Associate Vice Chancellor of Research (8/2001 – 8/2002): Work with the Vice-Chancellor for Research at CU-Boulder to support campus wide research activities. Worked on research policies and programs. Served on various campus committees and represented CU-Boulder research to the community.

Chair of CU System Faculty Council (7/2012 – 7/2014): Direct the CU System Faculty Council activities representing more than 3,000 tenured/tenure track faculty and 1,500 full-time non-tenure track instructors from all four campuses. Serve as a liaison to the Board of Regents and faculty. Participate in system wide initiatives like the climate survey. Review system-wide academic and administrative policies. Committees: Educational Policies and University Standards Committee (EPUS), Budget Committee, GLBTI Committee, Ethnic and Minority Affairs Committee, Ad-hoc Communication and Excellence Committee, Personnel Committee, Women's Committee, Ad-hoc Salary and Climate Committee, President's Task Force on Teaching and Technology.

Chair of Boulder Faculty Assembly (7/2015 – 7/2016): Direct the Boulder Faculty Assembly activities which include the executive committee and 14 other committees. Serve as a liaison between the Board of Regents and Boulder faculty. Participate in campus wide initiatives. Review campus academic and administrative policies.

**Academic Management Institute (AMI);** Denver CO

Director (8/2011-7/2014): sponsored by the Colorado Network of Women Leaders, a program of the American Council on Education (ACE). This program brings together more than 50 up and coming leaders from the state of CO and WY colleges and universities multiple times for advanced career development. Leading administrators from academia and the community join us for talks and discussions. Responsible for finding the speakers and developing the yearly curriculum.

Board Member (7/2014 – 7/2016): member of the AMI governing board and the Colorado Network of Women Leaders. We work to further initiatives for professional development to advance women in all levels of academia.

**Northwestern University;** Evanston, IL

Research Assistant (September 1988-July 1993): (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

Intern (Summer 1991-1992, Spring 1993): 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.

**Waubonsee Community College;** Sugar Grove, IL

Faculty (August 1990-December 1992): Developed and taught courses in the mathematics department.

**Naval Research Laboratory;** Washington D.C.

Engineering Consultant (July 1989, Sept. 1990): Developed finite-difference time-domain electromagnetic simulation codes using FORTRAN 90 for defense related applications running on a Connection High Speed Computing Machine.

**National High School Institute;** Northwestern University, IL

Engineering/Science Division Faculty (July 1990): Taught a summer course in medical instrumentation to high school juniors and seniors. Supervised independent study projects.

**Fermi National Accelerator Laboratory;** Batavia, IL

Engineering Intern (Summer 1988): Wrote code to control CAMAC data acquisition cards for the superconducting super-collider magnets in the magnet development and test facility.

Co-op Education Engineering Student (August 1984-August 1987): 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.

**University of Illinois;** Urbana, IL

Teaching Assistant (August 1987-May 1988): Re-developed and taught a biomedical instrumentation lab in the Electrical and Computer Engineering Department.

Physics Lab Researcher (January 1885-May 1988): Worked in a physics lab on various instrumentation and technology.

## AWARDS AND RECOGNITION

2019-2021 **Timmerhaus Teaching Ambassadorship Award** ($50,000 and $47,000 program development) CU System Award

2018 ***Excellence in Service Award*** Department of Electrical, Computer and Energy Engineering

2017 **BOLD fellow** (Broadening Opportunity through Leadership and Diversity) ($20,00 program development) College of Engineering and Applied Sciences

2017 Selected as a University of Colorado Boulder **Engage Faculty Fellow** to expand, deepen, and institutionalize community-based learning at CU Boulder

2014 University of Colorado at Boulder ***BFA Faculty Recognition Award*** for continued support of the CU community through service activities.

2012 University of Colorado System Faculty Council ***Distinguished Service Award***

2011 University of Colorado Boulder Faculty Assembly "***Excellence in Service***" Award

2009 University of Colorado Boulder ***Women Who Make a Difference*** Award

2004 ***Editor's Choice Award*** "Memories" in Touch of Tomorrow, International Library of Poetry

2002 **Elizabeth E. Gee Memorial Lectureship Award** Selected by CU System for record of: Advancing women in academia and community activism; Research, teaching, and/or service that pushes the boundaries of disciplinary knowledge and makes connections between disciplines; Significant and original scholarship and/or creative work; Distinguished record in teaching excellence

2001-2002 Selected as the first Leadership Education for Advancement and Promotion **(LEAP) fellow** as a part of NSF's **Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers (ADVANCE)** Institutional Transformation Award

2001-2002 Pew-Carnegie Teaching Scholar Award - Selected as a **CASTL fellow** for the Carnegie Academy for the Scholarship of Teaching and Learning (CASTL). This is a two-year program in CA designed to advance the scholarship of teaching and learning in all disciplines. 50 faculty nationwide were chosen to participate, I was the only engineer.

2001-2002 Selected as an **Emerging Leadership Fellow** (ELP) for the University of Colorado

2001 Advisor to College of Engineering Outstanding Undergraduate Research Award recipient; Todd Lammers

2000 College of Engineering **Peebles Teaching Award** for "demonstrating a unique commitment to students through innovations in engineering education"

2000 Biography included on **National Academy of Engineering** "Celebrating Women in Engineering" Web page http://www.nae.edu/nae/cwe

1999 American Society of Engineering Education **Helen Plant Award**: Best Non-Traditional Session "Teaching Creativity" at the Frontiers in Education Conference

1999 **Best Paper of Session**, *International Materials and Packaging Society Annual Conference*

1999, 2000 HandiSwing first year design research displayed at **Smithsonian**

1999 Advisor to College of Engineering Outstanding Undergraduate Research Award recipient; Ian Rumsey

1997-2001 National Science Foundation **CAREER Award**

1997 Sloan **New Faculty Fellow** for the International Frontiers in Education Conference

1996 International Union of Radio Science **Young Scientist Award**

1996 Faculty Advisor for Outstanding Student Chapter; Institute of Electronic and Electrical Engineers

1994 **Junior Faculty Development Award**; University of Colorado at Boulder

1988 - 1993 **Cabell Fellowship** (tuition and stipend) to Northwestern University

## Administrative Council Appointments

2001-2004 Elected to be a member of the Institute of Electronics and Electrical Engineers (IEEE) Education Division **Administrative Council**

1999-2001 Elected to International Union of Radio Science **Administrative Council**

1997-2001 Elected to IEEE Antennas and Wave Propagation International **Administrative Council**

## Editorial Work

2001-2006 Associate Editor for IEEE Microwave and Wireless Components Letters

2000-2001 Newsletter Editor of Perspectives in Electromagnetics for Applied Computational Electromagnetics Society Journal

1997-2005 Associate Editor for IEEE Antennas and Wave Propagation Society Journal

## LEADERSHIP ACTIVITIES

2018-2019 Elected to be **President of the PAC 12 Academic Leadership Coalition**; The mission of the PAC-12 Academic Leadership Coalition is to improve the effectiveness and responsiveness of each member school's shared governance organization; and where commonalities occur, to facilitate academic and research cooperation that is jointly beneficial to participating institutions. Member Schools; Stanford University, UC-Berkeley, UCLA, Arizona State University, Oregon State University, University of Arizona, University of Colorado-Boulder, University of Oregon, University of Southern California, University of Utah, University of Washington, Washington State University.

2017 **National Certification** as a Gallup Strength's Coach

2015-2017 **Chair** of the Boulder Faculty Assembly (faculty governance)

2015-2017 **Vice-Chair** of the State of Colorado Faculty Advisory Committee (CFAC)

2012-2014 **Chair** of the University of Colorado System Faculty Council (faculty governance)

2013 **Certified facilitator** for Gallup Strengths Based Leadership workshop

2011 **National Certification** as a facilitator for NCWIT COLORS workshops

2011-2012 **Chair** of the Faculty Council Women's Committee

2011-2012 **Chair** of the Faculty Council Communication Committee

2011 Leadership in Engineering Education 2-Day Workshop, American Society for Engineering Education

2010-2012 **Chair** of the Boulder Faculty Assembly Diversity Committee

2010-2012 **Secretary** of the Faculty Council Budget Committee

2010 Carnegie Teaching and Learning Conference (CASTL), Omaha, NE

2009-2010 **Chair** of the Boulder Faculty Assembly Administrator Appraisal Committee

2009-2011 Elected to an at-large position on the **Executive Committee** of the Boulder Faculty Assembly

2008 – 2013, 2018 - ongoing **Faculty Chair** of the Chancellors Committee on Women (CCW). CCW is an informed advocate for all women on the campus; classified and unclassified staff, tenure-track and non-tenure track faculty; undergraduate, graduate, and professional students, and administrators. As a representative committee of women across campus, our collective experience is diverse and proactive, and we are committed to the following ongoing goals: We monitor the status of women on campus. We recommend policy to create significant change. We work to assure justice and equity for women at the University of Colorado at Boulder. (member since 2005)

2009-2015 Organizing committee for and/or chaired the CU Women Succeeding Symposium

2009-2011 Elected **member-at-large** rep of the Boulder Faculty Assembly to the System Faculty Council

2009-2011 Investigator in CU's President's Teaching and Learning Collaborative, a **Carnegie Academy for the Scholarship of Teaching and Learning** (CASTL) program

2009-2010 Selected to participate in the **Academic Management Institute** (AMI). A leadership and administrative training program; 2 people from CU Boulder are selected to participate each year

2005-2008 re-elected 2008-2011 Selected to be a member of the **National Academy of Science** (NAS) Physics Division Committee on Radio Frequencies (CORF)

2009 **National Academy of Science** team trip to San Pedro, Chile on an ambassador mission to the Atacama Large Millimeter/submillimeter Array (ALMA). It is the world's most advanced radio astronomy observatory currently under construction at 5000 m in altitude in the Chilean Andes

2007 Research in Engineering Education Workshop, American Society for Engineering Education, Golden, CO

2006 **Technical Program Chair,** "Frontiers in Education" IEEE Education Society Representative

2005-2014 Member of **steering committee** for the Institute for Ethics and Civil Engagement Founded in 2005, the IECE's purpose is to nurture and encourage ethical and civic education at the University of Colorado at Boulder, to prepare our students for a lifetime of service to society as thoughtful, ethical and engaged citizens and contribute to the vitality of the many communities we serve from the local level to the global

2003 **General Chair** with James Avery of ASEE/IEEE "Frontiers in Education" Conference, "Engineering as a Human Endeavor; Partnering Academia, Government, Industry and Community", 600+ international attendees

2003 **Keynote** at "Self-Leadership: Women Succeeding in the Professoriate" A University of Colorado Symposium, Denver Campus

2001-2002 **Treasurer** for American Society of Engineering Education - Women in Engineering (WIE) Division

2002 Participated in a national planning conference "Liberal Studies and the Integrated Engineering Education of ABET 2000" sponsored by **NSF** (35 faculty nationwide invited)

2002 Participated in a national discussion / colloquy on "Developing a teaching and learning center in engineering" sponsored by the **National Academy of Engineering** (30 faculty nationwide invited)

2002 Participated in a national Distance Education Colloquy "Learning Objectives for Engineering Education Laboratories; What Are They?" sponsored by **ABET & Alfred P. Sloan Foundation** (50 faculty nationwide invited)

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

2000 **Technical Program Committee** for National Radio Science Institute Conference

2000 Elected to membership to URSI Commission B ; Numerical Methods

1999-2000 Elected **Secretary** of International Union of Radio Science (URSI) Commission D

1999-2000 **Chair** of Denver Local IEEE MTT/APS/GRSS Society

1999 Elected to **Senior Membership** in the Institute of Electronics and Electrical Engineers

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

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

1995 Elected to membership to URSI Commission D ; High Speed Devices

1993, 1994, 1996, 1998, 1999 Participant in Los Alamos National Lab and Lincoln Lab *Conference on High Speed Computing*, OR **(participation by invitation)**

## PROFESSIONAL ACTIVITIES and DEVELOPMENT

### Funding Agency Reviews

National Science Foundation (NSF) Technical Review Panels

NSF Educational Review Panels

NSF Curriculum, Course, and Lab Improvement (CCLI) Review Panels

National Center for Innovation and Invention in Academia (NCIIA) Review Panels

### Review Papers For

IEEE Antennas and Wave Propagation Society

IEEE Microwave Theories and Techniques Society

IEEE Electromagnetic Compliance 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

### Selected Professional Society Participation

Senior Member of Institute of Electronics and Electrical Engineers (IEEE)

Antennas and Wave Propagation Society (APS)

APS administrative council member
APS representative to Society for Sociological Impact of Technology

APS Education Committee

Microwave Theories and Techniques Society

Electromagnetic Compliance Society

Components Manufacturing and Packaging Technology Society

Education Society

2012-current Colorado Faculty Advisory Committee (CFAC)

2010, 2011, 2013 Colorado Learning with Technology (COLT) Conference

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

1998 Participant in National Center for Innovation and Invention in Academia *Teaching Creativity Workshop*

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

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

1995-2010 Faculty Advisor for IEEE student group, Boulder, CO

1994-current Member of American Society of Engineering Education

1994-current Member of Applied Computational Electromagnetics Society

1994-2000 Member of NSF CampMODE Research Center

1994 Participant in *Honors Seminar on Teaching and Learning*, Boulder, CO

**Selected Conference Activities**

2004, 2005, 2009, 2010, 2011 Speaker for Women Succeeding in Academia

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

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

1999 Chaired Session "A College Based Program for Enhancing Teaching and Learning" at Frontiers in Education Conference, Puerto Rico

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

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

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

1994, 1998, 1999, 2014 Organized and Chaired sessions at the IEEE Antennas and Wave Propagation Annual Conferences

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

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

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

## Selected Mentoring

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

Mentoring National Science Foundation GK-12 Fellows

Students funded with full RA, performs 20 hours a week of outreach in the school

Boulder High School Honors Physics Program (Alex Settle) 8/1999-5/2000

Casey Middle School Science (4 students) 8/2000 – 6/2002

## Selected University of Colorado Activities

2016-current System Concurrent Enrollment Committee

2016-current Inter-campus tuition benefit committee

2012-2014: Involved in the campus discussion about the external Title IX review, involved in the actual review and involved in the hiring of the new Title IX director

2000-current: Member of the Awards/Scholarship Committee, College of Engineering

2000-current: Member of the Assessment Committee, College of Engineering

2010: Office of Diversity Equity and Civic Engagement (ODECE) external advisory committee meeting

2011-2013 Campus committee evaluating the information technology on campus

2010-2011 Campus committee for the student climate survey

2010-2011 University system wide Diversity Awards/Grants Committee

2010-current Chair of the CCW awards committee

2005-2014 Ethics and Civic Engagement Educational Programs awards committee for the Institute for Ethics and Civil Engagement

2005-2014 Civic Engagement Awards Committee for the Institute for Ethics and Civil Engagement

2010-current Fund Raiser for the Faculty Council women's committee Women Succeeding in Academia Symposium

2009-current Chair the Elizabeth Gee Award Selection Committee given out by the faculty council women's committee

2009-2011 Member of the Faculty Council representing the BFA

2009-2011 Organizing committee (and co-chair 2010) for the November 2-day **Chancellors Diversity Conference**. University of Colorado at Boulder

2009-2013 BFA Representative to the Diversity Committee

2010-current Organizing Committee for the Accessing Higher Ground (AHG) Accessible Media, Web and Technology Conference

2000-2005 BFA Representative to the Chancellor's Advisory Committee on Public Access

2006-2010, resource 2010-2014 Boulder Faculty Assembly Budget and Planning committee

2001-current Electrical Engineering representative on the Boulder Faculty Assembly

1999-2000 Dean's Committee on Strategic Planning, College of Engineering

1998 Co-Developer and facilitator for the *Minority Success Institute*

1997-current Women in Engineering, Faculty Advisory Board, College of Engineering

1996-2012 Faculty Advisor to IEEE student chapter

1996 Member of Information Technology and Social Science Research Group

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

1995-2002 University of Colorado Speakers Bureau; talks to K-12 Schools on "Understanding Engineering"

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

1995-2002 Speaker for University of Colorado's Faculty Teaching Excellence Program (FTEP) Seminars

1995-current Participate in High School Honors Institute, Engineering Open House, and Engineering Career Day for High School Women

1994-2001 Member of Assessment Committee for Integrated Teaching and Learning Lab

1994-1999 Member of the Integrated Teaching and Learning Lab Task Force

1994 Diversity Planning Committee, College of Engineering

## VIDEOS

1. NBC Nightline National News "Compassionate Engineering", a piece on my assistive technology engineering design course http://tinyurl.com/NBC-ATvideo
2. Channel 9 Local News "The Assistive Glove" http://tinyurl.com/AssistiveGlove
3. Coleman Conference "Imagine! and University of Colorado Collaboration in Assistive Technology" http://tinyurl.com/ColemanImagine
4. College of Engineering Freshman Design Expo "Research Project Student Presentations" http://tinyurl.com/AtechDesignExpo
5. Imagine! University of Colorado, College of Engineering, Piket-May https://youtu.be/dOWtHUK9oJA

## BOOK CHAPTERS

**1.** Piket-May and Taflove, Chapter 13; "FDTD Modeling of High Speed Digital Circuits" in *Computational Electrodynamics*, Editor: Allen Taflove, Artech House, 1996, pp 431-474.

**2.** Houshmand, Itoh, Piket-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.** Piket-May, Houshmand, 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.** Taflove, Hagness, Piket-May, Chapter 9 in section V; Electromagnetics; "Computational Electromagnetics: The Finite Difference Time Domain Method" in *The Electrical Engineering Hand*book, Editor Wai-Kai Chen, Elsevier Academic Press, 2005, pp 629-670.

**5.** PIKET-MAY MJ, HADI MF, ELSHERBENI AZ, Bollimuntha R. "FDTD in Cartesian and Spherical Grids." in Computational Photonic Sensors Ed.Hameed M; Obayya S. (Cham: Springer, January 10, 2019).153-175. (Published online June 14, 2018)

## PODCAST

https://www.colorado.edu/cuengage/2017/12/27/amplify-december-27th-faculty-fellows-edition-engineering-students-design-assistive

## WEBINAR

1.5 hour national Webinar: 6/13/2018 ANCOR, Imagine!, and University of Colorado, Boulder, Melinda Piket-May, Brodie Schulze, Fred Hobbs, "Partnering with Universities for Individualized I/DD Technology Solutions" *This was a national Webinar INVITED and run by ANCOR. The American Network of Community Options and Resources (ANCOR) is a national, nonprofit trade association representing more than 1,600 private community providers of services to people with disabilities. Combined, they support over one million individuals with disabilities.*

## HANDBOOKS

- **National Academy of Science**, Committee on Radio Frequencies (CORF) sub-panel that wrote the "Handbook of Frequency Allocations and Spectrum Protection for Scientific Uses". National Academies Press. ISBN #13 978-0-309-10301-5
- **National Academy of Science**, Committee on Radio Frequencies sub-panel that wrote "Views of the NAS and NAE on Agenda Items at Issue at the World RadioCommunication Conference 2012," http://www.nap.edu

## SAMPLE FCC FILINGS (with CORF)

- Committee on Radio Frequencies FCC filing August 16th 2007 : The impact of proposed vehicle-mounted Earth Station/fixed satellite on Radio Astronomy observations at 14.47 - 14.50 GHz; protection of observations in this band with coordination requirements.
- Committee on Radio Frequencies FCC filing August 13th 2007 : The potential impact of proposed permanent fixed microwave operations in the 4940 - 4990 MHz (4.9 GHz) band on radio astronomy observations.
- Committee on Radio Frequencies FCC filing February 5th 2007 : The importance of the scientific observations in the Earth Explorations Satellites band at 36.0 to 37.0 GHz and the need to protect them. Also, FCC should reinstate a mandatory power limit.

## PEER REVIEWED JOURNAL PAPERS

Google Scholar Journal Citations: 2599, Most Cited Paper: 515, Over 175 Papers and Presentations

- Katz, D., 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 Propagat*ion **39**, 1203-1212, 1991.
- Piket-May, M., A. Taflove, W. Lin, D. Katz, V. Sathiaseelan, and B. Mittal, "Computational Modeling of Electromagnetic Hyperthermia: Three-Dimensional and Patient-Specific", *IEEE Trans. Biomedical Engineering* **39**, 226-237, 1992.
- Sathiaseelan, V., A. Taflove, M. Piket-May, C. Reuter, and B. Mittal, "Application of Numerical Modeling Techniques in Electromagnetic Hyperthermia", *Journal of Applied Computational Electromagnetics Society* **7**, 61-71, 1992.
- Piket-May, M., A. Taflove, and J. Troy, "Electrodynamics of Visible Light Interactions with the Vertebrate Retinal Rod", *Optics Letters* **18**, 568-570, 1993.
- Thomas, V., M. Jones, M. Piket-May, A. Taflove, and E. Harrigan, "The Use of SPICE Lumped Circuits as Sub-grid Models for FD-TD Analysis", *IEEE Micro. Guided Wave Letters* **4***,*141-143*,* July 1994.
- Piket-May, M., A. Taflove, and 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* **42,** 1514-1523**,** August 1994.
- Hadi, M., and 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* **45**, 254-264, February 1997.

- Marshall, T., and M. Piket-May, "Finite-Difference Time-Domain Modeling of Light Trapping in Solar Cells", *Applied Computational Electromagnetics Society Journal* **12**, 31-42, November 1997.
- Sheppard, Jenison, Agogino, Brereton, Bucciarelli, Dally, Demel, Dym, Evans, Faste, Henderson, Minderman, Mitchell, Oladipupo, Piket-May, Quinn, Regan, Wujeket, "Examples of Freshman Design Education", *International Journal of Engineering Education* **13**, Number 4, 1997.
- Vichot, P., 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, 98-104, February 1998.
- Thomas, K., 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*, **13**, No. 2, 160-167, 1998.
- Reuter, C., A. Taflove, V. Sathiaseelan, 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* **46**, pp. 313-319, April 1998.
- Gravrok, R., A. Byers, M. Piket-May, "A Novel Way of Calculating System Inductance", *International Journal on Microcircuits and Electronic Packaging (IMAPS)*, 1998.
- Rumsey, I., P. Kelly, M. Piket-May, "Photonic Bandgap Structures used as Filters in Microstrip Circuits", *IEEE Microwave Guided Waves and Letters*, 336-338, 1998.
- Piket-May, M., B. Sopori, "Numerical Model of Light-Trapping in Solar Cells", (**invited technical feature paper)** to *Applied Computational Electromagnetics Newsletter*, Volume 13, No. 2, 13-18, 1998.
- Mix, J., J. Dixon, Z. Popovic, M. Piket-May, "Incorporating non-linear lumped elements in FDTD: the equivalent source method", (**invited)** *International Journal of Numerical Modeling; Electronic Networks, Devices and Fields*, **12**, 157-170, 1999.
- Byers, A., S. Hall, M. Piket-May, "Modeling Ground Bounce Effects in High Speed Design", (**invited)** *International Journal of Microcircuits and Electronic Packaging,* Issue III, Vol. 22, No. 3, 1999.
- Kelly, K., M. Piket-May, "Propagation Characteristics for a One Dimensional Grounded Finite Height Finite Length Electromagnetic Crystal", *Journal of Lightwave Technology*, November 1999.
- Bhobe, Holloway, Hall, Piket-May, "Coplanar Waveguide Fed Wideband Slot Antenna", *IEE Electronics Letters*, 1340-1342, Volume 36, number 16, August 3, 2000.
- Fornberg, Kanda, Lasek Hall, Piket-May *,* "The Impact of a Non-Ideal Return Path on Differential Signal Integrity", *IEEE Trans. on Electromagnetic Compatibility*, February 2002.
- Fornberg,P.; Kanda,M.; Lasek,C.; Hall,S.; Piket-May,M., "The Impact of a Non-Ideal Return Path on Differential Signal Integrity", *IEEE Trans. on Electromagnetic Compatibility*, Vol 44, NO 1, February 2002, pp.11-15.
- Vichot, P.A.; Grabow, B.E.; Piket-May, M., "High-speed operation of a low-power 4-bit serial-to-parallel converter", *IEEE Transactions on Applied Superconductivity*, Volume: 12, Issue: 4, December 2002, pp.1891- 1896.
- E.F. Kuester, M. A. Mohamed, Melinda Piket-May, C. Holloway, "Averaged Transition Conditions for

Electromagnetic Fields at a Metafilm", *IEEE Trans. on Antennas and Propagation, special issue on Metamaterials*, Vol. 51, October 2003, pp.2641-2651.

- Staker, S. W., Holloway, C. L., Bhobe, A.U., Piket-May, M., "Alternating-Direction Implicit (ADI) Formulation of the Finite-Difference Time-Domain (FDTD) Method: Algorithm and Material Dispersion Implementation", *IEEE Trans. on Electromagnetic Compatibility, special issue on Advanced EMC Numerical Modeling*, Vol. 45, No. 2, May 2004, pp.156-166.
- Bhobe, A. U, Holloway, C. L, Piket-May, M, Hall, R, 'Wide-Band Slot Antennas with CPW feed lines: Hybrid and Log-Periodic Designs', *IEEE Trans. on Antennas and Propagation (special issue on Metamaterials)*, Vol. 52, October 2004.
- F. Schlottau, M. Piket-May, and K. Wagner, "Modeling of femtosecond pulse interaction with inhomogeneously broadened media using an iterative predictor corrector FDTD method," *Optics Express* 13, 182-194, 2005.
- M. A. Mohamed, E. F. Kuester, C. L. Holloway, and M. Piket-May, "The Field of an Electric Dipole and the Polarizability of a conducting Object Embedded in the Interface Between Dielectric Materials," *Progress In Electromagnetics Research B*, Vol. 16, 1-20, 2009.
- AA Aly, M. Piket-May, "FDTD Computation for SAR induced in human head due to exposure to EMF from mobile phone", *Advanced Computing*, Vol. 5, No.5/6, 2014.
- R. Smith, A. Weiss, R. Bollimuntha, M. Piket-May, M. F. Hadi and A. Elsherbeni, "Merging VSim's Model Building and Visualization Tools with Custom FDTD Engines," ACES Express Journal, vol. 1, No. 1, pp. 16—19, January 2016
- R. C. Bollimuntha, M. F. Hadi, M. J. Piket-May and A. Z. Elsherbeni, "Dispersion Optimized Plane Wave Sources for Scattering Analysis With Integral Based High Order Finite Difference Time Domain Methods," IET Microwaves, Antennas & Propagation, vol. 10, No. 9, pp. 976—982, June 2016
- M. F. Hadi, A. Z. Elsherbeni, M. J. Piket-May and S. F. Mahmoud "Radial Waves Based Dispersion Analysis of the Body-of Revolution FDTD Method," Accepted for IEEE Transactions on Antennas and Propagation, 2016
- R. Chandra Bollimuntha, M. Hadi, A. Elsherbeni and M. Piket-May, "Dispersion Optimized Plane Wave Sources for Integral Based High Order Finite Difference", *IEEE Trans. on Antennas and Propagation (in review).*
- R. Chandra Bollimuntha, M. Hadi, A. Elsherbeni and M. Piket-May, "Error analysis of Total / Scatter Field transform techniques for FV24 ", *IEEE Trans. on Antennas and Propagation (in preparation).*
- Hadi MF, Elsherbeni AZ, Piket-May MJ, Mahmoud SF. "Radial Waves Based Dispersion Analysis of the Body-of-Revolution FDTD Method." IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION. 65 (2) (February 01, 2017): 721-729.
- Smith R, Weiss A, Bollimuntha R, DMello S, Piket-May M, Hadi M, Elsherbeni A. "Merging VSim's Model Building and Visualization Tools with Custom FDTD Engines." APPLIED COMPUTATIONAL ELECTROMAGNETICS SOCIETY JOURNAL. 32 (12) (December 01, 2017): 1144-1147.
- Hadi MF, Bollimuntha RC, Elsherbeni AZ, Piket-May M. "A Spherical FDTD Numerical Dispersion Relation Based on Elemental Spherical Wave Functions." IEEE ANTENNAS AND WIRELESS PROPAGATION LETTERS. 17 (5) (May 01, 2018): 784-788.

## PEER REVIEWED CONFERENCE PAPERS

- Pala, W.P.; Taflove, A.; Piket, M.J.; Joseph, R.M., “Parallel finite difference-time domain calculations”, *Proceedings of the IEE International Conference on Computation in Electromagnetics*, UK, 83-85, 1992.
- Reuter, C., 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*, Monterey, CA, 767-774, March 1995.
- Piket-May, M., 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*, Los Angeles, CA, June 1995.
- Gravrok, R., M. Piket-May, K. Thomas, " LC: an integrated methodology to model and visualize the complex electrodynamics of 3D structures ", *Proceedings of the 3rd Topical Meeting on Electrical Performance of Electronic Packaging*, Portland, OR, 73-76, November 1995.
- Hadi, M., and M. Piket-May, "A Modified FDTD 2,4 Scheme for modeling Electrically Large Structures with High Phase Accuracy", *Progress in Applied Computational Electromagnetics Annual Review*, Monterey, California, 767-774, March 1996.
- Piket-May, M.; Thiele, E.T.; Haussmann, G.; Gravrok, R., “A powerful EM analysis tool based on the FDTD simulation method”, *Symposium on Antenna Technology and Applied Electromagnetics 1996 Conference Proceedings*, Montreal, Canada, 309-311, August 1996.
- Piket-May, M., J. Avery, L. Carlson, "A Multidisciplinary, Hands-On Introduction to Engineering through a Community/University Collaboration in Assistive Technology", *Proceedings of Frontiers in Education Conference*, Salt Lake City, Utah, 926-929, November 1996.
- Vichot, P., E. Thiele, J. Dunn, M. Piket-May, “Numerical modeling of a clock distribution network for a superconducting multichip module”, *Proceedings of the 4$^{th}$ Topical Meeting on Electrical Performance of Electronic Packaging*, Napa Valley, CA, 43-46, November 1996.
- Marshall, T., M. Piket-May, “Numerical Modeling of Light-Trapping in Solar Cells”, *Progress in Applied Computational Electromagnetics Annual Review,* Monterey, California, pp. 1163-1167, March 1997.
- Vichot, P., 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*, CA, NTIS, pp. 1168-1173, March 1997.
- Haussmann, G., M. Piket-May, "Modified FDTD M(2,4) Scheme in 3D", *Progress in Applied Computational Electromagnetics Annual Review*, Monterey, California, NTIS, pp. 82-89, March 1997.
- Dunn, J., 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*, San Jose, California, IEEE/Electronic Industries Association, pp. 1094-1099, May 1997.
- Brown, R., P. Ensaf, T. Marshall, Z. Popovic, M. Piket-May, "Printed Microwave Couplers with Thermal Isolation", *1997 IEEE MTT-S International Microwave Symposium Digest*, Denver, Colorado, pp. 983-986, June 1997.
- Gravrok, R., 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)*, San Jose, California, pp. 83-86, October 1997.
- Piket-May, M., 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)*, San Jose, California, pp. 87-90, October 1997.

- Piket-May, M., J. Avery, "Results of Client-Based Freshman Design Projects", Session F1F, *Proceedings of the 1997 IEEE Frontiers in Education Conference*, Pennsylvania, 634-637, November 1997.
- Piket-May, M., "Facilitating Learning: Believe in Your Students", Session S4A, *Proceedings of the 1997 IEEE Frontiers in Education Conference*, Pittsburgh, Pennsylvania, 1481-1484, November 1997.
- Byers, A., B. Boots, R. Gravrok, M. Piket-May, "Characterizing Power Distribution Systems", **(invited)** *Applied Computational Electromagnetics Symposium Proceedings*, CA, pp. 687-694, **3** 1998.
- Haussmann, G., M. Piket-May, "Material Interface in M(2,4) FDTD", *Applied Computational Electromagnetics Symposium Proceedings*, Monterey, California, pp. 531-536, March 1998.
- Haussmann, G., M. Piket-May, K. Thomas, "Modifying a Graphically Based FDTD Simulation for Parallel Processing", **(invited)** *Applied Computational Electromagnetics Symposium Proceedings*, Monterey, California, pp. 113-120, March 1998.
- Piket-May, M., J. Avery, "University/Community Outreach in Assistive Technology", CD and Web *Proceedings of Technology and Persons with Disabilities Conference*, Los Angeles, CA, 4 pages, 1998.
- Haussmann, G., M. Piket-May, "Modeling Interface Discontinuities and Boundary Conditions for a Dispersion Optimized Finite Difference Time Domain Method", CD *Proceedings of the 1998 IEEE Antenna Propagation Society Symposium*, Atlanta, GA, 1820-1825, June 1998.
- Kelly, P. K.; Diaz, L. J.; Piket-May, M.; Rumsey, I., " 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, 239-248, San Diego, CA, July 1998.
- Piket-May, M., G. Haussmann, K. Thomas, J. Mix, "EMC/EMI Design and Analysis Using FDTD", (**invited)**, *1998 IEEE Electromagnetic Compatibility Society Conference Proceedings*, 177-181, Denver, Colorado, August 1998.
- Piket-May, M., K. Thomas, R. Gravrok, "Packaging Design and Analysis Using FDTD", **(invited)** *Proceedings of the IEEE 7th Topical Meeting on Electrical Performance of Electronic Packaging (EPEP)*, 264-266, West Point, New York, October 1998.
- Chang, J., Piket-May, M., Avery, J.P., "Using Student Feedback in the Learning Environment", *Proceedings of the 1998 IEEE Frontiers in Education Conference*, 643-646, 1998.
- Piket-May, M., Chang, J., Avery, J.P., "Understanding what Success means in Assessment", 1998 *Proceedings of the 1998 IEEE Frontiers in Education Conference*, 20-22, 1998.
- Avery, J.P., Piket-May, M., Chang, J., Carlson, L., Sullivan, J., S. Davis, "Integrated Teaching and Learning Lab", *Proceedings of the 1998 IEEE Frontiers in Education Conference*, 932-936, 1998.
- Rumsey, Mix, Piket-May, M., "Methods for including Lumped Elements in FDTD Simulations", *Applied Computational Electromagnetics Symposium Proceedings*, March 1999, California, 5 pages.
- Byers, A., M. Piket-May, S. Hall, "Quantifying the Impact of Non-Ideal Ground Return Path" (**Best Paper of Session)**, *IMAPS Annual Conference Proceedings*, 6 pages, April 1999.
- Rumsey, Mix, M. Piket-May, "Using Combined SPICE-FDTD Simulation to Model High-Speed Systems", *IMAPS Annual Conference Proceedings*, 6 pages, April 1999.
- Vichot, Grabow, Clatterbaugh, M. Piket-May, "Electrical Design of an MCM for a 2.5Gbps Network Switch", *IMAPS Annual Conference Proceedings*, 6 pages, April 1999.
- Chang, Piket-May, Avery, "How Students Help you to Succeed" *1999 ASEE Conference Proceedings*, 4 pages, June 1999.
- Rumsey, Piket-May, "Application of the Finite Difference Time Domain ( FDTD) Method to a challenging Real World EMC Problem", (**invited)**, *1999 IEEE Electromagnetic Compatibility Society*

*Conference Proceedings*, 5 pages, August 1999.

- Rumsey, Byers, Piket-May, "Digital Filtering Embedded in a Finite-Difference Time-Domain (FDTD) code ", (**invited),** *Proceedings of the International Conference on Electromagnetics in Advanced Applications (ICEAA99)***,** pp. 669-672, Torino, Italy, September 1999.
- Carlson, L., J. Sullivan, S. Poole, M. Piket-May, " Engineers as Entrepreneurs: Invention and Innovation in Design and Build Courses", *Proceedings of Frontiers in Education*, 4 pages, November 1999.
- Rumsey, Piket-May, M., " Hybrid FDTD-Frequency Dependent Network Simulations using Digital Filtering Techniques", (**invited)** *Applied Computational Electromagnetics Symposium*, March 2000, Monterey, California, 5 pages.
- Lammers, T., S. Staker, M. Piket-May, "Systematic Studies in Annular Ring PBG structures", *Applied Computational Electromagnetics Symposium*, March 2000, Monterey, California, 5 pages.
- Byers, A., I. Rumsey, M. Piket-May, Z. Popovic, "Novel Photonic Band Gap Structures", *IEEE AP-S Symposium/URSI Radio Science Meeting,* July 2000, Salt Lake City, UT, 5 pages.
- Bhobe, A., Piket-May, M., Holloway, C., "Novel Wideband Antennas", *IEEE AP-S Symposium/URSI Radio Science Meeting,* July 2000, Salt Lake City, UT, 5 pages.
- Harmon, S., A. Byers, M. Piket-May, "Application of the FDTD Method to the Challenge Interconnect Problem", (**invited)**, *1999 IEEE Electromagnetic Compatibility Society Conference Proceedings*, 5 pages, August 2000.
- Byers, A., P. Fornberg, M. Piket-May, C. Holloway, "EMC in Printed Circuit Board Design", (**invited)**, *2000 IEEE Electromagnetic Compatibility Society Conference Proceedings*, 5 pages, August 2000.
- Piket-May, M., J. Avery, "First Year Students can do E-Teams", *NCIIA Symposium; CULTIVATING INNOVATION: Creativity & Technical Entrepreneurship in Higher Education*, MARCH 9-11th, 2001, Washington, DC.
- Staker, S., M. Piket-May, C. Holloway, "Alternating Direction Implicit (ADI) FDTD Technique", *IEEE AP-S Symposium/URSI Radio Science Meeting,* July 2001, Boston, MA.
- Elhelbawy, M., M. Piket-May, H. Jordon, "A Performance Study of the Alternating Direction Implicit (ADI) FDTD Technique", *IEEE AP-S Symposium/URSI Radio Science Meeting,* July 2001, Boston, MA.
- Rumsey, Piket-May, M., "Hybrid FDTD-Frequency Domain Simulations using Digital Filtering Techniques", *IEEE AP-S Symposium/URSI Radio Science Meeting,* July 2001, Boston, MA.
- Bhobe, A.U., Holloway, C.L, Piket-May, M., "Meander delay line challenge problem: a comparison using FDTD, FEM and MoM", **invited paper**, *2001 IEEE Electromagnetic Compatibility Society Conference Proceedings*, 5 pages, August 2001.
- Piket-May, M., J. Avery, "Service Learning Retention Results", *Proceedings of Frontiers in Education*, CD publication, November 2001, Reno, NV.
- Piket-May, M., J. Avery, "The Art of Teaching Engineering", *Proceedings of Frontiers in Education*, CD publication, November 2004, Savannah, GA.
- Avery, J., M. Piket-May "FIE2003 Assessment Results", *Proceedings of Frontiers in Education*, CD publication, November 2004, Savannah, GA.
- Hadi, M., S. DeMello, R. Smith and M. Piket-May, "Using the VSim GUI to visualize high-order FV24 simulations of electrically large systems", *IEEE Transactions on Antennas and Wave Propagation* Conference, July 2014, Memphis, TN.
- Piket-May, M., T. May, M. Sturm, T. Brunsgaard, "Using touchpoints to increase retention in Engineering", *ASEE First Year Engineering Experiences Conference*, August 2015, Roanoke, VA.

- M. F. Hadi, S. F. Mahmoud, A. Z. Elsherbeni and M. J. Piket-May, “FDTD Modeling Challenges of Cylindrical Structures,” IEEE AP-S Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, Puerto Rico, June/July 2016
- PIKET-MAY MJ, Bogatin E, Chandra Bollimuntha R, Paladugu, D. "An Efficient Method for Glass Weave Skew Simulations." (Electronic Design Innovation Conference, September 11, 2017 - September 13, 2017), September 12, 2017
- Bollimuntha RC, Hadi MF, Piket-May MJ, Elsherbeni AZ. "Numerical Dispersion Analysis for Spherical FDTD." 2018 INTERNATIONAL APPLIED COMPUTATIONAL ELECTROMAGNETICS SOCIETY SYMPOSIUM (ACES) (International Applied Computational Electromagnetics Society Symposium (ACES), March 25, 2018 - March 29, 2018): IEEE, January 01, 2018
- M. F. Hadi, A. Z. Elsherbeni, Ravi C. Bollimuntha and Melinda J. Piket-May “FDTD Numerical Dispersion Relation in Spherical Coordinates,” 12th European Conference on Antennas and Propagation, London, UK, April 2018
- Deek F, Piket-May M, Bogatin E. "Transfer Impedance Drop off in Power/Ground Plane Cavities." 2018 IEEE SYMPOSIUM ON ELECTROMAGNETIC COMPATIBILITY, SIGNAL INTEGRITY AND POWER INTEGRITY (EMC, SI & PI) (IEEE Symposium on Electromagnetic Compatibility, Signal Integrity and Power Integrity (EMC, SI & PI), July 30, 2018 - August 03, 2018): 105-109.

## PAPERS AT PROFESSIONAL MEETINGS

**(Reviewed abstract)**

- Piket-May, M., 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.
- Piket-May, M., V. Sathiaseelan, 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.
- Piket-May, M., 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.
- Piket-May, M., V. Sathiaseelan, 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.
- Thiele, E., 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.
- Piket-May, M., A. Taflove, V. Sathiaseelan, "FD-TD Computational Modeling of Electromagnetic Hyperthermia", *Proceedings of Progress in Electromagnetics Symposium*, p.113, Cambridge, MA, July 1991.
- Reuter, C., V. Sathiaseelan, 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*, Orlando, FL, November 1991.
- Reuter, C., V. Sathiaseelan, 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*, Orlando, FL, November 1991.

- Reuter, C., V. Sathiaseelan, 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.
- Reuter, C., V. Sathiaseelan, 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.
- Piket-May, M., 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.
- Thiele, E., 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.
- Sathiaseelan, V., 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.
- Reuter, C., M. Piket-May, A. Taflove, V. Sathiaseelan, 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.
- Piket-May, M., "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.
- Piket-May, M., 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.
- Katz, D., 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.
- Piket-May, M., 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.
- Katz, D., M. Piket-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.
- Taflove, A., M. Piket-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.
- Piket-May, M., K. Thomas, "Automated FD-TD Modeling for Parameter Extraction", *Proceedings of the National Radio Science Meeting*, Boulder, Colorado, January 1994.
- Piket-May, M., "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.
- Thiele, E., M. Piket-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.

- Reuter, C., M. Piket-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.
- Mix, J., M. Piket-May, "Automated FD-TD Modeling for Parameter Extraction", *Proceedings of the National Radio Science Meeting*, Boulder, Colorado, January 1995.
- Hadi, M., M. Piket-May, "Modified FDTD 2,4 Scheme", *Proceedings of the Applied Computational Electromagnetics Society Conference*, Monterey, CA, March 1995.
- Mix, J., M. Piket-May, K. Thomas, "LC; An Electromagnetics FDTD Simulation Tool", *IEEE AP-S Symposium/URSI Radio Science Meeting*, Long Beach, CA, June 1995.
- Hadi, M., M. Piket-May, "Phase Accuracy in the Modified FDTD 2,4 Scheme", *IEEE AP-S Symposium/URSI Radio Science Meeting*, Long Beach, CA, June 1995.
- Vichot, P., M. Piket-May, A. Taflove, "FDTD Modeling of Complex Interconnects", **(invited presentation)** *Proceedings of the Progress in Electromagnetics Research Conference*, Seattle, WA, July 1995.
- Joseph, R., M. Piket-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.
- Vichot, P., M. Piket-May, A. Taflove, "Microwave Circuit Analysis Using FD-TD", **(invited presentation)** *Proceedings of the Progress in Electromagnetics Research Conference*, Seattle, WA, July 1995.
- Piket-May, M., J. Dunn, E. Thiele, Z. Schoenborn, P. Vichot, "Numerical Modeling of MultiChip Modules", *URSI Radio Science Meeting*, Boulder, CO, January 1996.
- Piket-May, M., E. Thiele, G. Haussmann, J. Mix, "FDTD Modeling of EM Packaging Effects", *URSI Radio Science Meeting*, Boulder, CO, January 1996.
- Hadi, M., M. Piket-May, E. Thiele, "Modeling Wave Propagation through a Building Using the Hybrid M24, S22 FDTD Algorithm", *URSI Radio Science Meeting*, Boulder, CO, January 1996.
- Vichot, P., 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, Maryland, July 1996.
- Mix, J., G. Haussmann, M. Piket-May, "FDTD Modeling of Electromagnetic Packaging Effects", *IEEE AP-S International Symposium and URSI Radio Science Meeting*, Baltimore, Maryland, July 1996.
- Hadi, M., 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, Maryland, July 1996.
- Piket-May, M., "New Developments with the Finite-Difference Time Domain Method", **(invited presentation)** International Union of Radio Science: XXVth General Assembly, Lille, France, August 1996.
- Haussmann, G., 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.
- Piket-May, M., J. Avery, L. Carlson, J. Sullivan, "Integrated Teaching and Learning Lab", 90-minute (**invited presentation)**, *National Science Foundation Teaching and Technology Conference*, Golden, Colorado, July 1997.

- Piket-May, M., J. Avery, "Designing for the Community", **(invited presentation)** *1997 Annual Conference of the Rocky Mountain American Society of Engineering Educators*, Logan, Utah, August, 1997.
- Avery, J., M. Piket-May, "Integrated Teaching and Learning", **(invited presentation)** *1997 Annual Conference of the Rocky Mountain American Society of Engineering Educators*, Logan, Utah, August 1997.
- Piket-May, M., "Learning Interactively: Electromagnetics Case Study", on CD-ROM, Session F2I, *Proceedings of the 1997 IEEE Frontiers in Education Conference*, Pittsburgh, PN, November 1997.
- Avery, J., 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, Pennsylvania, November 1997.

- Kelly, K., 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, Colorado, January 1998.
- Haussmann, G., 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, Colorado, January 1998.
- Boots, B., 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, Colorado, January 1998.
- Haussmann, G., 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, Arizona, June 1998.
- Kelly, K., M. Piket-May, "Photonic Band Gap Structures for Antennas", *1998 IEEE Antenna Propagation Society Conference and URSI North American Radio Science Meeting*, Atlanta, Georgia, June 1998.
- Mix, J., 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, Georgia, June 1998.
- Rumsey, I., K. Kelly, A. Byers, M. Niyompong, M. Piket-May, "Characterizing Photonic BandGap Microstrips and Striplines", *1998 IEEE Antenna Propagation Society Conference*, Atlanta, Georgia, June 1998.
- Byers, A., S. Hall, M. Piket-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.
- Kelly, P.K., T. Lammers, M. Piket-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.
- Rumsey, I., J. Mix, M. Piket-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.
- Bhobe, A., M. Piket-May, "Circularly Polarized CPW Fed Slot Antenna", *Proceedings of the National*

*Academies of Sciences and Engineering Radio Science Meeting*, 292, Boulder, CO, January 1999.

- Bhobe, A., M. Haeusler, K. C. Gupta, M. Piket-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.
- Rumsey, I., T. Lammers, M. Piket-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.
- P.K. Kelly, T. Lammers, I. Rumsey, M. Piket-May, S. Hagness, "Computational Analysis of Photonic Bandgap Substrates", *Workshop on Electromagnetic Crystal Structures, Design, Synthesis, and Application, Photonic Bandgap Structures*, Poster ThU20, CA, January 1999.
- P.K. Kelly., Piket-May, M., Hagness "Band Diagram for a Grounded Periodic Dielectric Substrate with Square Lattice and Finite Height",*1999 IEEE Antenna Propagation Society Conference*, Orlando, FL, July.
- Piket-May, M., Thomas, Gravrok, "High Speed Packaging Design and Analysis*",1999 IEEE Antenna Propagation Society Conference*, Orlando, FL, July.
- P.K. Kelly., Piket-May, M., Hagness "Surface Wave Analysis for Periodic Structures",*1999 URSI General Assembly*, Toronto, Canada, August.
- Rumsey, Byers, Mix., Piket-May, "FDTD Interfaces for High Speed Circuit Design", (**invited)** *1999 URSI General Assembly*, Toronto, Canada, August.
- Byers, Piket-May, Hall, " Packaging Effects on Signal Integrity", (**invited)** *1999 URSI General Assembly*, Toronto, Canada, August.
- Sung, K.Y., M. K Ah Yo, T. Lammers, A. Byers, M. Piket-May, and W. Shiroma, " Planar Photonic Bandgap Structures for Coplanar Waveguide ",*1999 URSI General Assembly*, Toronto, Canada, August.
- Mix, Dixon, Piket-May "FDTD Analysis of an Active Antenna Using a Nonlinear Transistor Model", *1999 URSI General Assembly*, Toronto, Canada, August.
- Bhobe, Piket-May, Holloway, "CPW fed Log-Periodic Slot Antenna",*1999 URSI General Assembly*, Toronto, Canada, August.
- Byers, A., P. Fornberg, M. Piket-May, "New Developments in Understanding Non-Ideal Return Paths", *National Academies of Sciences and Engineering Radio Science Meeting*, Boulder, CO, January 2000.
- Rumsey, I., A. Holley, M. Piket-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.
- Lammers, T., A. Holley, J. Huang, M. Piket-May, "Novel Designs using Frequency Selective Surfaces", *National Academies of Sciences and Engineering Radio Science Meeting*, Boulder, CO, January 2000.
- Piket-May, M., J. Avery, "Teaching Design using Assistive Technology Projects", *NCIIA Symposium; CULTIVATING INNOVATION: Creativity & Technical Entrepreneurship in Higher Education*, Washington, DC, March 9-11$^{th}$ 2000.
- Taflove, A., S. Hagness, M.Piket-May, "Advances in FDTD" (**invited)** *IEEE AP-S Symposium/URSI Radio Science Meeting*, Salt Lake City, UT, July 2000.
- Piket-May, M., J. Chang, "Experiential Engineering Education", *Progress in Electromagnetics Research Conference* (PIERS), Boston, MA, July 2000.
- Rumsey, I., M. Piket-May, "Hybrid FDTD-Frequency Dependent Network Simulations using Digital

Filtering Techniques", *Progress in Electromagnetics Research Conference* (PIERS), Boston, MA, July 2000.

- Kelly, P.K., T. Kutrumbos, A. Byers, I. Rumsey, T. Lammers, J. Huang, S. Hagness and M. Piket-May, " Photonic Bandgap Studies for Finite Structures", *Progress in Electromagnetics Research Conference* (PIERS), Boston, MA, July 2000.
- Piket-May, M., A.Taflove, S. Hagness, "Advances in FDTD", (**invited)** *United Kingdom Applied Computational Electromagnetics Symposium*, London, England, December 2000.
- Staker, S., M. Piket-May, C. Holloway, "An Algorithm Study of the Alternating Direction Implicit (ADI) FDTD Technique", *National Academies of Sciences and Engineering Radio Science*, Boulder, CO, January 2001.
- Fornberg, P., A. Byers, S. Harmon, M. Piket-May ," FDTD Modeling of Printed Circuit Board Signal Integrity and Radiation ", *National Academies of Sciences and Engineering Radio Science*, Boulder, CO, January 2001.
- M.J. Piket-May, Piket P.H., "The Tipping Point in Gender Studies", 1 hour, *Achieving Success in Academia Symposia*, University of Colorado System, March 6th, 2009.
- M.J. Piket-May "Negotiating at an Uneven Table: Developing Moral Courage in Resolving Our Conflicts", *Diversity Summit*, 2 hours, University of Colorado at Boulder, November 3rd, 2009.
- M.J. Piket-May "Lazy Wisdom", *Diversity Summit*, 2 hours, University of Colorado at Boulder, November 3rd, 2009.
- M.J. Piket-May "Reflections and Critical Thinking", at *Making it Real: Conference on Service Learning and Civic Engagement*, University of Colorado at Boulder, 2009.
- M.J. Piket-May "Negotiating at an Uneven Table: Developing Moral Courage in Resolving Our Conflicts", *Achieving Success in Academia Symposia*, University of Colorado System, Feb. 26th , 2010.
- M.J. Piket-May, Darling, B., Miranda, "Women Don't Ask", 1.5 hour, *Diversity Summit*, University of Colorado at Boulder, November 2nd, 2010.
- M.J. Piket-May, Piket P.H., "The Tipping Point in Diversity Studies", 1.5 hour, *Diversity Summit*, University of Colorado at Boulder, November 3rd, 2010.
- M.J. Piket-May et. al. "Women Don't Ask ", *Achieving Success in Academia Symposia*, University of Colorado System, February 25th , 2011.
- A. Andrews and M.J. Piket-May, "Building Community through Collaboration", **invited paper**, Coleman Conference, 2013.
- Ravi C. Bollimuntha, Mohammed F. Hadi, Melinda J. Piket-May, and Atef Z. Elsherbeni, "Separation of Electric and Magnetic Surface Currents in Equivalent EM Problems", *Proceedings of the National Radio Science Meeting*, Boulder, Colorado, January 2016.
- Ravi C. Bollimuntha, Mohammed F. Hadi, Melinda J. Piket-May, and Atef Z. Elsherbeni, "Excitation of Plane Waves in Higher Order FDTD Grid", *Proceedings of the National Radio Science Meeting*, Boulder, Colorado, January 2016.
- S. DMello, A. Weiss, M. F. Hadi, M. J. Piket-May, and Atef Z. Elsherbeni, "High Performance Multi-CPU and Multi-GPU Computing of the High-Order FV24 Algorithm", *Proceedings of the National Radio Science Meeting*, Boulder, Colorado, January 2016.
- Sai Ram Anand Vempati, Sunil Sumanth Kollipara, Aleksandr Gafarov, Melinda J.Piket-May, Eric Bogatin, "Determining Accurate ESR values of Ceramic Decoupling Capacitors, *Proceedings of the National Radio Science Meeting*, Boulder, Colorado, January 2016.

- Mohammed F. Hadi, Melinda J. Piket-May, S. Mahmoud and Atef Z. Elsherbeni, "Dispersion Relation for Cylindrical FDTD Grids", *Proceedings of the National Radio Science Meeting*, Boulder, Colorado, January 2016.
- Chun-Ting "Tim" Wang Lee, Bill Hargin, Eric Bogatin, and Melinda J. Piket-May "Novel 5X-Line Technique to Extract Copper Conductivity", *Proceedings of the National Radio Science Meeting*, Boulder, Colorado, January 2016.
- Pranav Balachander, Melinda Piket-May and Eric Bogatin, "Analysis of Simulation to Measurement Correlation for PCB Interconnects in HFSS", *Proceedings of the National Radio Science Meeting*, Boulder, Colorado, January 2016.
- A. Weiss, S. DMello, A. Akbar Basha, A. Z. Elsherbeni, M. J. Piket-May, and M. F. Hadi, "Enhancement of Higher Order FDTD Method Using OpenCL, CUDA, and MPI on Single and Multiple CPUs/GPUs," Accepted for USNC/URSI National Radio Science Meeting, Boulder, Colorado, January 2017
- R. C. Bollimuntha, J. Diener, M. F. Hadi, M. J. Piket-May, and A. Z. Elsherbeni, "Ogive Modeling with Conformal Standard and Higher-Order FDTD," Accepted for USNC/URSI National Radio Science Meeting, Boulder, Colorado, January 2017
- R. C. Bollimuntha, V. D. Paladugu, R. Saha, M. J. Piket-May, A. Z. Elsherbeni, and M. F. Hadi, "Fiber Glass-Weave Skew Analysis using the Finite-Difference Time-Domain Method," Accepted for USNC/URSI National Radio Science Meeting, Boulder, Colorado, January 2017
- R. C. Bollimuntha, V. D. Paladugu, R. Saha, M. J. Piket-May, A. Z. Elsherbeni, and M. F. Hadi, "Fiber Glass-Weave Skew Analysis using the Finite-Difference Time-Domain Method," USNC/URSI National Radio Science Meeting, Boulder, Colorado, January 2017
- A. Weiss, S. DMello, A. Z. Elsherbeni, M. J. Piket-May, and M. F. Hadi, "Enhancement of Higher Order FDTD Method Using OpenCL, CUDA, and MPI on Single and Multiple CPUs/GPUs," USNC/URSI National Radio Science Meeting, Boulder, Colorado, January 2017
- "Community Collaboration for Assistive Technology Design", 45 minute INVITED TALK, Coleman Conference, November 2017, Superior, CO.
- M. F. Hadi, A. Z. Elsherbeni, Ravi C. Bollimuntha and Melinda J. Piket-May, "Reflection Analysis of Spherical FDTD Absorbing Boundary Conditions," 2018 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, Boston, MA, July 2018
- R. C. Bollimuntha, M. F. Hadi, M. J. Piket-May, and A. Z. Elsherbeni, "Spherical FDTD Numerical Dispersion Analysis," USNC/URSI National Radio Science Meeting, Boulder, Colorado, January 2018
- N. Sonth, R. C. Bollimuntha, M. F. Hadi, M. J. Piket-May, and A. Z. Elsherbeni, "A Finite Volumes-Based FDTD Material Dispersion Modeling," USNC/URSI National Radio Science Meeting, Boulder, Colorado, January 2018

## COURSES

***GEEN1400 Freshman Projects*** - 3 hours (Fall 1994 - ongoing most semesters)

A design section for the first year projects course that is a part of the Integrated Teaching and Learning Lab Program. This 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 a specific need. There have also been students that do community outreach to zoos, museums and classrooms.

**ECEN1400 ECE Freshman Seminar** - 1 hour (Fall)

Developed and taught this introduction to Electrical Engineering seminar.

**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. It teaches traditional material in a collaborative style. Students write reports and observations about

electromagnetics in addition to the traditional problem 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. (Spring)

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.

Basic Circuit Analysis for non-electrical engineering students.

**ECEN 4024/5024 Time Domain/Numerical Techniques -** 3 hours.

Theoretical development of the Finite Difference Time Domain Technique and open ended design projects using FDTD for a real world problems.

**ECEN 5154 Computational Electromagnetics** - 3 hours.

Provides a computational study of microwave circuits and antennas, using finite-difference, finite-element, and moment methods. Requires students to develop algorithms, write and execute programs, and prepare reports analyzing results. Circuits include waveguides, microstrip lines, and center-fed dipole antennas.

**ECEN 4224/5224 High Speed Digital Design** - 3 hours. (Spring)

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.

**ECEN 4324/5324 Micro-System Packaging** – 3 hours. (Fall)

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.

## POST DOCTORAL RESEARCHERS

Eric Thiele; Wright Patterson Air Force Research Center

Julie Chang; Higher Education

## GRADUATE STUDENTS

- Mohammed Hadi (PhD May 1996), Professor at the University of Kuwait, Modeling Long Distance Propagation using a 2D Modified (2,4) FD-TD scheme.
- Linden McClure (PhD May 1996), Engineer at HP: Colorado Memory Systems, Space Grant Project - COTS/ SEU/ Fault Tolerance.
- Gary Haussmann (MS EE 1995, PhD May 1998), EMC Engineer Silicon Graphics, Mountain View, California, Cray Research Intern (Summer 1995, Summer 1997) Modeling Long Distance Propagation using a 3D Modified (2,4) FD-TD Scheme.
- Todd Marshall (MS Thesis EE December 1996) Continued on for a PhD with Z. Popovic in Antenna Design, National Renewable Energy Lab (NREL) Research Assistant 1995 Computational EM Modeling of Solar Cells using a Modified FD-TD Scheme.
- Jason Mix (MS Thesis EE June 1995, PhD January 1999), Design Engineer at Intel 1999 - , Cray Research Intern (Summer 1994), Motorola Intern (Summer 1995), Intel Intern (Summer/Fall 1997)

Modeling High Speed Phenomena using FD-TD.

- Zale Schoenborn (MS Thesis EE December 1996), Design Engineer at Intel, Computational EM modeling of High Speed Digital Design for MCM's.
- David Smith (MS Thesis EE Dec 95), Continuing on for a PhD in Remote Sensing at CU, EM Analysis of EMP.
- Keith Kelly (PhD Aug 2000), Engineer at Ball Aerospace, Research Area: Microwave Photonic Band Gap Structures.
- Bryan Boots (MS May 1999) Intern at Ball, Summer 1999, Intern at Cray Research, Summer 1998, Research Area: Power/Ground Design for High Speed Systems; working at Ansoft.
- Ted Brannan (MS EE May 1999) FDTD modeling for Optical Resonators.
- Andrew Byers (MS Thesis May 2000) Intern at Intel, Summer 1998, 99 Research Area: High Speed Digital Design; working at Textronix; working for Ansoft.
- Shawn Staker (MS Thesis August 2000) Research Area; Higher Order FDTD Schemes; working at Lincoln Lab.
- Pelle Fornberg (MS Thesis December 2001) EMC; working at Intel.
- Billy Mansour (MS May 2002) High Speed Interconnects; working at Pico-second.
- Steve Hall (MS May 2002) High Speed Interconnects; working at Pico-second.
- Paul Vichot (MS EE May 1995 PhD May 2002) Engineer at Applied Physics Lab, Washington, DC Modeling High Speed Digital Design.
- Ian Rumsey (MS Thesis EE May 1999, PhD May 2002) Intern at Ball Aerospace, Summer 1998 Research Area: Antenna Design with PBG substrates ; Hybrid FDTD / S-parameter.
- Sirichia Kungswai (MS Thesis May 2002) High Speed Packaging.
- Todd Lammers ( MS Thesis June 2003) High Speed Routing EM Simulation.
- Alpesh Bhobe (MS Thesis EE December 1999, PhD December 2003) ADI Finite Difference Time Domain Methods for Anechoic Chambers.
- Mohamed Mohamed ( PhD June 2004) Theoretical Meta Material Design.
- Mona Elhelbawy ( PhD May2005) 3-D Cylindrical ADI FDTD Method.
- Seyit Tigrek (PhD) Java based Communication.
- Sanjay DeMello (MS December 2013) Massively Parallel Computing for a $4^{th}$ order FDTD algorithm.
- Vinit Vyas (MS December 2014) Fortran CUDA programming for FDTD core using GPU's
- Pranav Balachander (MS December 2015) Analysis of Simulation to Measurement Correlation for PCB Interconnects in HFSS
- Sai Vempati (MS December 2015) Determining Accurate ESR values of Ceramic Decoupling Capacitors
- Rohit Kandurwar (MS December 2015) OpenCL programming to maximize big computing for EM using Graphical Processing Units
- Ashik Imran Akbar Basha (MS May 2016) OpenCL programming to maximize big computing for EM using Graphical Processing Units
- Ravi Chandra Bollimuntha (PhD 2018) MV(2,4) Domain Decomposition FDTD
- Neeti Soonth (MS May 2018) Higher order FDTD with Dispersion

- Chun-Ting Wang Lee (Current PhD) Novel 5X-Line Technique to Extract Copper Conductivity
- Fadi Deek (Current PhD) Reducing Radiating Wave Modes in Printed Circuit Boards

## SELECT UNDERGRADUATE RESEARCH STUDENTS

- Hugo Stetz; Supercomputing
- Kristin Bogar; Assistive Technology Design
- Brandon Hernandez; Alexa Assistive Technology Design
- Anna Anderson; High Performance Computing
- Bennett; High Performance Computing
- Vincent Mahathirash ; High Performance Computing for Electromagnetic Behavior
- Alec Weiss ; Visual Simulation of Electromagnetic Behavior
- Ryan Smith ; Graphical User Interface for Massively Parallel Computing for a $4^{th}$order FDTD algorithm
- 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; ***College of Engineering Outstanding Undergraduate Research Award recipient***
- 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 ; Electrical MEMS Design
- Tom Hamilton ; 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; ***College of Engineering Outstanding Undergraduate Research Award recipient***
- 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

## DIRECT FUNDING SECURED (over $1,000,000 direct cost funding)

**National Science Foundation CAREER Award**
Computational Electromagnetic Studies of High Speed Design
$210,000

*Research Experience for Undergraduates*
$40,000

*NSF CAREER Industrial Matching from Intel Contract*
$75,000

**ARPA Device Optimization Program**
Subcontract from Cray Research
Full Wave Analysis of Electromagnetic Fields
$100,000

**Department of Defense**
Superconducting Multichip Module
$365,000

**Intel**
High Speed Design for Printed Circuit Boards
$105,000

**Cisco**
High Speed Design for EMC of Printed Circuit Boards
$60,000

**Jet Propulsion Lab Director's Discretionary Funds Award**
Miniature High Frequency Electronic Packaging Technology
$10,000

**ROME Air Force Research Lab**
Electromagnetic Electromigration Study
$20,000

**Kyocera through CampMODE**
Design of High Speed Connectors for Kyocera
Co-PI, John Dunn
$130,000

**NSF Academic Research Infrastructure Program**
Instrumentation for Wireless Multi-Media High-Speed Communications
PI; Popovic, Co-PI; Piket-May, Varenasi, Mathys
$500,000

**University of Colorado Integrated Teaching and Learning Lab**
First Year Engineering Design Projects Curriculum Development
$14,166

**University of Colorado Undergraduate Excellence Fund**
Introduction to Academia; A Retention Program for First Year Engineers
$9,000

**National Center for Innovation and Invention in Academia**
First Year Engineering Design Swing Project Commercialization
$10,500

**University of Colorado Council on Research and Creative Work Award**
Full Wave Analysis of EM Fields for High Speed Design
$5,000

**University of Colorado MIMICAD Center**
Signal Integrity Study
$5,000

**University of Colorado Undergraduate Research Opportunity (UROP)**
High Speed Interconnect Design, Signal Integrity, Assistive Technology Design, Supercomputing
$1,500 per student through many years

**Hughes Undergraduate Biomedical Initiative**
Hyperthermia Studies Using FDTD, EM Studies of the Human Retinal Rod
$4,000

**National Center for Innovation and Invention in Academia**
First Year Engineering Design Curriculum Development
Co-PI; J. Avery
$2,000

**University of Colorado through CampMODE**
Design of transmission Line MicroElectroMechanical Systems (MEMS) for Undergraduate Labs
$10,000

**University of Colorado Service Learning Grant**
Support for Community Outreach in Assistive Technology
Co-PI, James Avery
$1,000

**University of Colorado CIRTL Grant**
Assessment of Service Based Learning
$4,000

**University of Colorado Undergraduate Research Opportunity (DLA/SURF)**
High Speed Interconnect Design, Signal Integrity, Assistive Technology Design, Supercomputing
$1,500 per student through many years

**BOLD Fellow**
$20,000

**Engage Fellow**
$3,000

**LEAP**
$3000

## IN-KIND FUNDING

- **Electromagnetic Computer Simulation Tools** (over $1,000,000 indirect cost funding)
  (QUCS, Polar, Hyperlinx, ADS, HFSS)
- **Cray Research Supercomputer Accounts for Piket-May and all students**
  (over 10 years ~ $10,000,000 indirect cost funding)
- 2 GPU's for Parallel computing analysis
- **Intel** donated 3 high end PC's to my research group
- **Silicon Graphics** donated 4 high performance workstations to my research group (~$50,000)