Curriculum Vita - Highlights

NAME: **Daryl G. Beetner**
Professor of Electrical and Computer Engineering
Missouri University of Science and Technology, Rolla, MO 65409-0040
E-mail: daryl@mst.edu

ACADEMIC AND LEADERSHIP TRAINING:
- D.Sc.EE (1997) and M.S.EE (1994) from Washington University at St Louis.
- B.S.EE (1990) from Southern Illinois University at Edwardsville.
- University of Missouri Leadership Development Program, 2011-2012

WORK EXPERIENCE:
- Full professor in ECE with 15 years of experience at Missouri S&T.
- 5 years of experience as Associate Chair for Computer Engineering, Missouri S&T.
- 3-7 years of industry experience plus substantial interaction with industry.

HONORS AND AWARDS:
- 2 Missouri S&T Faculty Excellence awards for teaching, research, and service.
- 2 national awards for excellence in teaching, research and service (C. Holmes MacDonald Outstanding Young Electrical Engineering Professor).
- 1 regional award for excellence in teaching, research and service (IEEE St Louis Section Outstanding Faculty Award).
- Missouri S&T Innovative Teaching Award
- 2 nominations for best-paper awards
- Full-ride scholarships and/or fellowships for complete B.S, M.S., and PhD degrees.

RESEARCH:
- Total Grants: ~$15,928,538 (~$5,436,957 as PI and ~$3,467,761 shared credit).
- Sponsored funding from NSF, industry, military, national labs, DHS, as well as philanthropic organizations.
- 25 journal articles (additional 8 under review), 1 book-chapter, 3 patents/invention disclosures, 66 conference articles.
- 2 grants from NSF to develop instructional material.
- 16 publications related to educational materials and delivery.
- Research efforts in traditionally CpE and in EE areas.
- Helped develop the Center for Electromagnetic Compatibility, one of NSF's most successful I/UCRCs.

TEACHING:
- 2 NSF grants and 16 papers related to education.
- Multiple teaching commendations for high student-teacher ratings.
- 22 MS students and 4 PhD students graduated. 2 MS and 4 PhD students in progress. 15 undergraduates supported in research.
- Major academic contributions to ECE through Associate Chair position (see below)

- Broad variety of courses in both EE and in CpE.
- Significant laboratory materials development through an NSF-CCLI grant.
- Developed 1 graduate-level course and made substantial revisions to 2 labs and 2 undergraduate courses.
- Developed a DVD instructional course for industry on "EMC Principles".
- Regularly teach a course for ESIGELEC, Rouen, France on "Topics in Embedded Systems".
- Regularly taught practicing engineers about EMC through IEEE EMC Symposium Fundamentals (2008-2010), IEEE EMC Symposium Lab demonstrations (2006-2007), and EMC shortcourses (2000-2003).
- 6 years as instructor/director of the CHIPS/Cyberminer camp, an activity designed to attract high-school students to CpE.

SERVICE:
- 5 years as Associate Chair for CpE
  - Managed transfer courses, substitutions, and waivers, solved "tricky" advising issues for faculty and students, managed undergraduate recruiting activities (parent visits, ECE open house, high-school visits, etc.), oversaw CpE course quality, offerings and teaching assignments, and provided area leadership.
  - Major revision of CpE curriculum to include new courses and tighten course and grade requirements
  - Successful completion of 2008 ABET accreditation of CpE program. Responsible, along with associate chair for EE and department chair, for developing and implementing assessment plan, writing report, conducting visit, and all other major requirements for accreditation.
- Chair, University of Missouri Research Board
  - Manage distribution of approximately $2.2M of funding per year.
  - Work with faculty across disciplines and campuses to set policy of the Board.
  - Work with UM VP for Research and campus Research Officers on system research and policy issues.
  - Negotiated procedures for handling NTT faculty applications.
  - Acquired administration promise for additional $300k of funding for the Board. While this funding was later diverted by President Wolf to fund his Strategic Initiatives, the initial allocation illustrates an ability to demand and receive funding from the University.
- Regularly organized and chaired the meeting of the NSF I/UCRC Center for Electromagnetic Compatibility, a 3-day conference including roughly 150 participants, 30 oral presentations, and 50 posters.
- Co-managed facilities, budget, staff, students, etc. of EMC Laboratory.
- Associate editor, IEEE Transaction on Instrumentation and Measurement.
- Faculty Mentor for Asst. Prof. Dr. Yiyu Shi, who has become one of the department's strongest faculty.
- Served in more than 12 officer positions within professional organizations.
- Many years of service as a faculty advisor to students in HKN and IEEE.
- Served on 24 committees within the Department and University.

Curriculum Vita - Complete

NAME: **Daryl G. Beetner**
Professor of Electrical and Computer Engineering
126 Emerson Electric Co. Hall
Missouri University of Science and Technology, Rolla, MO 65409-0040
Phone: (573) 341-6203; FAX: (573) 341-4532
E-mail: daryl@mst.edu   URL: http://www.mst.edu/~daryl

ACADEMIC TRAINING:
D.Sc. Electrical Engineering, Washington University at St Louis, 1997
Dissertation: *"Inference of Spectral and Temporal Characteristics of Pericardial Potentials Using Individualized Human Heart-Torso Models and the Multipole-Equivalent Method"*
Advisor: Dr. R.M. Arthur

M.S. Electrical Engineering, Washington University at St Louis, 1994
Thesis: *"Efficient Generation of Synthetic-Focus Ultrasonic Images Using Media-Dependent Time-of-Flight"*
Advisor: Dr. R.M. Arthur

B.S. Electrical Engineering, Southern Illinois University at Edwardsville, 1990

WORK EXPERIENCE:
2014-present, Chair of Electrical and Computer Engineering, Missouri University of Science and Technology.
2010-present, Professor of Electrical and Computer Engineering, Missouri University of Science and Technology.
2004-2010, Associate Professor of Electrical and Computer Engineering, Missouri University of Science and Technology.
2005-2009, Associate Chair, Computer Engineering, Missouri University of Science and Technology.
1998-2004, Assistant Professor of Electrical and Computer Engineering, University of Missouri - Rolla
1997-1998, Visiting faculty of Electrical Engineering, Southern Illinois University at Edwardsville
1997-1998, Research Associate, Washington University at St Louis
1991-1997, Research Assistant, Washington University at St Louis
1988-1989, Lab Assistant, Southern Illinois University at Edwardsville
1988-1995, Industrial Automation Engineering Consultant, Digi-Gear Systems, Glen Carbon, IL (1988-1991 as regular employee, 1991-1995 as a consultant)

PROFESSIONAL ACTIVITIES:

Service to professional organizations.

IEEE EMC Society – University Grants committee chair (2011-2014), Special Committee on Power Electronics secretary (2013-present), Educational and Student activities vice-chair (2013-2014), Educational and Student activities secretary (2012-2013), Tutorials Chair (2007-2010).

IEEE – Rolla sub-section chair (2001-2002), assistant chair (2000-2001), secretary/treasurer (1999-2000), member-at-large (1998-1999).

Toastmasters – UM-Rolla section secretary (1999-2000), VP membership (2001-2002).

Association of Graduate Engineering Students (AGES) secretary (1996-1997).

Associate editor, IEEE Transactions on Instrumentation and Measurement, 2009-present

Advisor to student professional organizations

HKN Electrical and Computer Engineering Honor Society – Advisor (2002-2010) (UMR HKN chapter received honorable mention for the HKN national "Outstanding Chapter" award in 2002, 2003, 2004, 2005, 2006, 2007, 2008).

IEEE Computer Society – Faculty advisor UM-Rolla Students branch (1999-2001)

IEEE – St Louis chapter student paper judge (1998, 2000, 2003)

IEEE – Region 5 student paper judge (2000)

IEEE-EMC Society student paper contest judge (2002-2004)

Reviewer for professional papers, proposals, projects, and tenure applications

Journals: IEEE Transactions on EMC, IEEE Trans. on Instrumentation and Measurement, Electron Technology, IEEE Trans. on Medical Imaging,

Conferences: IEEE EMC Symposium, IEEE Intelligent Automation Conference, ANNIE, ASEE annual conference, Instrumentation and Measurement Society Conference

Books: Oxford Press

Proposals: NIH SBIR program, University of Missouri Research Board, NSF CCLI, Georgia National Science Foundation, IEEE EMC Society University Grant

External Tenure: University of Arkansas, University of Missouri Kansas City

Other: Department of Homeland Security Scholarship program, Savannah National Lab technical project review, Lawrence Livermore National Lab technical project review, IEEE EMC Symposium Best Student Paper award

Memberships (past and present)

IEEE, Senior Member

IEEE Engineering in Medicine and Biology Society

IEEE Education Society

IEEE Electromagnetic Compatibility Society

ASEE

Sigma Xi

Eta Kappa Nu Electrical and Computer Engineering Honor Society

Toastmasters

UNIVERSITY SERVICE

Chair, University of Missouri Research Board (2011-Present)
Member, University of Missouri Research Board (2010-Present)
Electrical and Computer Engineering Promotion and Tenure Committee (2010-Present)
ECE OURE representative, (2008-2014)
University of Missouri Patent committee (2007-present)
College of Arts and Sciences Pre-Med Advisory Committee (2000-2014)
CpE representative for Cyberminer "CHIPs" camp (2008-present)
Missouri S&T Strategic Planning Lever 4.5 Committee (2013-2014)
Missouri S&T "Best In Class" strategic hire selection committee (2013-present)
Electrical &Computer Engineering Vision 2020 Committee (2013-present)
Electrical &Computer Engineering library liaison (2013-present)
Computer Science and Engineering Working Group (2008-2010)
Computer Engineering ABET Coordinator (2005-2009)
School of Engineering Curriculum Committee (alternate 2008-2010).
Chair of Electrical & Computer Engineering CpE faculty Search Committee (2009)
Electrical & Computer Engineering CpE Faculty Search Committees (2000-2002, 2004, 2007, 2008, 2011, 2012, 2013)
Electrical & Computer Engineering EE Faculty Search Committee (2012)
Electrical & Computer Engineering EMC faculty Search Committee (2006-2007)
Electrical & Computer Engineering Executive Committee (2005-2009)
Electrical & Computer Engineering Chair Search Committee (2002-2003)
Electrical & Computer Engineering CpE Undergraduate Studies Com. (2003-pres.)
Electrical & Computer Engineering Lab Development Committee (1999-2001)
Electrical & Computer Engineering Scholarship Committee (1999-present)
Electrical & Computer Engineering CpE ABET Preparation Committee (2000-2002)
School of Engineering Search Freshman Engineering Director Search Com. (2005)
School of Engineering Agenda and Nominating Committee (2002)
Bioinformatics Faculty Search Committee (2000-2002)
Computer Science, Instructor Search Committee (1998)
Freshman Advisor (1998-2001)
Conference chair, Center for Electromagnetic Compatibility (2006, 2008, 2012, 2013)
Chair, EMC faculty search committee (2013-14)
Faculty Mentor for ECE Assistant professors (2010-2014)

HONORS AND AWARDS:

"Engineers Make a Difference Award," Missouri Engineers Week, 2009 (local award).
Faculty Excellence Award, Missouri University of Science & Tech, 2008 (local award).
Multiple Teaching commendations at Missouri S&T, where teacher ratings were high enough to qualify for the Outstanding Teaching Award but number of courses taught over the year were too low (local award)
Nominated for Best Paper Award, 2008 IEEE International Symposium on Electromagnetic Compatibility, August 2008.
Nominated for Best Paper Award, DesignCon, Feb. 2008.
"Engineers Make a Difference Award," Missouri Engineers Week, 2008 (local award).
School of Engineering Innovative Teaching Award, University of Missouri-Rolla, 2004 (local award).
Faculty Excellence Award, University of Missouri-Rolla, 2003 (local award).
C. Holmes MacDonald Outstanding Young Electrical Engineering Professor, 2003 (national award).
C. Holmes MacDonald Outstanding Young Electrical Engineering Professor, Honorable Mention, 2002 (national award).
The IEEE St Louis Section Outstanding Faculty Award, 2001 (regional award).
Oak Ridge Associated Universities Ralph E. Powe Award ($10,000 national award), 2000.

Senior Member IEEE, 2003.

Registered Professional Engineer in the state of Missouri, 2002-present.

Doctoral Assistantship, Washington University, 1995.

Four Year Doctoral Fellowship (tuition + stipend), Washington University, 1991-1995.

One Year Graduate Fellowship (full-tuition), Southern Illinois University at Edwardsville, 1990 (*declined for W.U. Fellowship).

Basler Electric Company Award for "best graduating electrical engineer", Southern Illinois University at Edwardsville, 1990.

SIUE Foundation Academic Excellence Award, runner up, for "best student in graduating class", Southern Illinois University at Edwardsville, 1990.

Fellow, Undergraduate Research Academy – an appointed position that included an open research grant, Southern Illinois University at Edwardsville, 1990.

Four-year, full-tuition Presidential Scholarship, Southern Illinois University at Edwardsville, 1986.

SPONSORED RESEARCH:

Total Grants: ~$15,928,538

Total on which PI: ~$5,436,957

Total value of D.G. Beetner's contribution: ~$3,467,761

D. Beetner (PI-25%), D. Pommerenke (25%), Y. Shi (50%), "Modeling and Experiment of High Power Radio-Frequency Effects on Printed Circuit Boards and their Embedded Chipsets," 3/14-12/14, $60,000.

D. Beetner (PI-50%), D. Pommerenke (50%), "Shielded Liquid Crystal Polymer (LCP) Packages)," Cobham Inc., 12/13 – 6/14, $54,310

D. Beetner (PI-50%), S. Grant (50%), "VOXION multiphysical Sensor Fusion," 12/13 – 8/14, 21st Century Systems, $70,000.

D. Pommerenki (PI-20%), D.G. Beetner (20%), J. Drewniak (20%), J. Fan (20%), R. DuBroff (20%), "EMC ASHRAI Consortium," American Society of Heating and Refrigeration, 1/12-7/13, $200,000

D.G. Beetner (20%), J. Drewniak (20%), R.E. DuBroff (20%), J. Fan (20%), D. Pommerenke (20%), "Missouri S&T EMC Consortium/Center for Electromagnetic Compatibility", Companies include Altera, Bosch, Cisco, CST, Freescale, Hamilton Sundstrand, Huawei, IBM, Intel, John Deere, Laird, LG, Samsung, Sony, Sunway, and Panasonic. (PI varies for each company), 2012, ~$1,306,000.

J. Drewniak (PI-50%), D.G. Beetner (50%), "EMI by Design," Sandia National Labs, 7/11-7/13, $86,100.

D.G. Beetner (20%), J. Drewniak (20%), R.E. DuBroff (20%), J. Fan (20%), D. Pommerenke (20%), "Missouri S&T EMC Consortium/Center for Electromagnetic Compatibility", Companies include Altera, Amber Precision Instruments, Bosch, Cisco, Freescale, Huawei, IBM, Intel, John Deere, Laird, LG, Nvidia, Samsung, Sony, and Panasonic. (PI varies for each company), 2011, ~$1,478,000.

D.G. Beetner (PI-50%), D. Pommerenke (50%), "Modeling and Experiments of High Power Radio-frequency Effects on Printed Circuit Board and their Embedded Chip Elements," Techflow Scientific (with the U.S. Air Force), 8/11-7/14, $215,000.

D.G. Beetner (PI – 50%), S. Grant (50%) "Detection and Neutralization of Electronics Used with Explosive Devices," NorthEastern University (with the Department of Homeland Security), Oct. 10- June 13, $159,707.

D.G. Beetner (20%), J. Drewniak (20%), R.E. DuBroff (20%), J. Fan (20%), D. Pommerenke (20%), "Missouri S&T EMC Consortium/Center for Electromagnetic Compatibility", Companies include Altera, Apple, Amber Precision Instruments, ARC, Bosch, Cisco, Freescale, Huawei, IBM, Intel, John Deere, Laird, LG, Samsung, Sony, and Panasonic. (PI varies for each company), 2010, ~$1,112,200.

D.G. Beetner (PI-100%), "RF Direction Finding for Persistent Multi-Intelligence Perimeter Sensing," 21st Century System, April 10-Sept. 11, $35,000.

D.G. Beetner (20%), J. Drewniak (20%), R.E. DuBroff (20%), J. Fan (20%), D. Pommerenke (20%), "Missouri S&T EMC Consortium/Center for Electromagnetic Compatibility", Companies include Altera, Apple, Amber Precision Instruments, ARC, Bosch, Cisco, Freescale, GM, Huawei, IBM, Intel, John Deere, Laird, LG, NEC, NVIDIA, Research in Motion, Samsung, Sony, and Zuken. (PI varies for each company), 2009, ~$1,037,384.

D.G. Beetner (PI-100%), "Transmission Surveillance (TRANSURV) System," 21st Century Systems, 12/09-4/10, $9,999.

D.G. Beetner (20%), J. Drewniak (20%), R.E. DuBroff (20%), J. Fan (20%), D. Pommerenke (20%), "UMR/MS&T EMC Consortium", Companies include Altera, Apple, Amber Precision Instruments, Bosch, Cisco, Freescale, GM, IBM, Intel, John Deere, Laird, LG, NEC, NVIDIA, Research in Motion, Samsung, and Sony. (PI varies for each company), 2008, $1,407,500.

D.G. Beetner (PI-50%) and D. Pommerenke (50%), "Transmission Surveillance (TRANSURV) System," 21st Century Systems, 11/08-4/09, $14,000.

D.G. Beetner (PI – 40%), S. Grant (35%), D. Pommerenke (20%), S. Frimpong (5%) "Detection and Neutralization of Electronics Used with Explosive Devices," NorthEastern University (with the Department of Homeland Security), July 08-June 10, $170,501.

D.G. Beetner (20%), J. Drewniak (20%), R.E. DuBroff (20%), J. Fan (20%), D. Pommerenke (20%), "UMR/MS&T EMC Consortium", Companies include Altera, Apple, Amber Precision Instruments, Bosch, Cisco, Freescale, GM, Huawei, IBM, Intel, LG, NEC, Research in Motion, Sony, Texas Instruments, and Zuken. (PI varies for each company), 2007, $950,300.

D. Beetner (PI – 16%), D. Pommerenke (14%), S. Grant (14%), R. DuBroff (14%), J. Fan (14%), J. Drewniak (14%), M. O'Keefe (14%), "Improvised Explosive Device Defeat Effort," General Dynamics, 10/22/07-4/20/10, $2,720,534.

R. DuBroff (PI-20%), D. Beetner (CoPI–20%), J. Drewniak (CoPI-20%), J. Fan (20%), D. Pommerenke (20%) "Electromagnetic Compatibility Center – An Industry/University Cooperative Research Collaboration," National Science Foundation 8/15/07-8/14/08, $10,000.

J. Drewniak (PI-20%), R. DuBroff (20%), D. Beetner (20%), J. Fan (20%), D. Pommerenke (20%), "Knowledge Integrated Through Hardware Design Applications in the Undergraduate Curriculum-A Program in Electromagnetic Compatibility, Signal Integrity, and High Speed Design," National Science Foundation, 9/1/06-8/31/10, $494,627.

D.G. Beetner (30%), J. Drewniak (20%), R.E. DuBroff (20%), D. Pommerenke (30%), "UMR EMC Consortium", Companies include Altera, Apple, Amber Precision Measurement, Cisco, Freescale, Hitachi, Huawei, IBM, Intel, LG, NCR, NEC, Research in Motion, Samsung, Sony, Texas Instruments, and Zuken. (PI varies for each company), 2006, $751,131.

D.G. Beetner (PI 50%) and D. Pommerenke (50%), "Detection of Portable Electronic Devices," Lockheed Martin, 2006, $25,000

J. Drewniak (PI 17%), D.G. Beetner (17%), T.H. Hubing (17%), R.E. DuBroff (17%), D. Pommerenke (17%), T. Van Doren (17%), "EMC Consortium Membership", Texas Instruments, 11/05-11/06, $50,000.

D.G. Beetner (PI 100%), "Detection of Skin Cancer Using Electrical Impedance," University of Missouri Research Board, 06/04-06/05, $31,800.

J. Drewniak (PI 20%), D.G. Beetner (20%), T.H. Hubing (20%), R.E. DuBroff (20%), D. Pommerenke (20%), "EMC Consortium Membership", Texas Instruments, 11/04-11/05, $50,000.

D.G. Beetner (PI 64%), T.H. Hubing (Co-PI 20%), R.E. DuBroff (4%), T.P. Van Doren (4%), and J.L. Drewniak (4%), "Vehicle Electrical System EMC Expert System Development," General Motors Corporation, 1/03 – 1/04, $212,785.

D.G. Beetner (PI 64%), T.H. Hubing (Co-PI 20%), R.E. DuBroff (4%), T.P. Van Doren (4%), and J.L. Drewniak (4%), "Vehicle Electrical System EMC Expert System Development," General Motors Corporation, 10/01 – 9/02, $238,240.

D.A. Summers (PI 25%), D.G. Beetner (15%), T.J. Herrick (10%), G. Grzegorz (15%), R.J. Stanley (15%) S. Agarwal (15%), "Implementation of New Waterjet Technology

for Humanitarian Demining," Science Applications International Corporation (SAIC), 8/01 – 3/02, $668,000.

O.R. Mitchell (PI 20%), K.T. Erickson (15%), D. Beetner (10%), R.B. Stone (10%), D.A. Summers (15%), S. Kapila (15%), V.S. Rao (15%), "The Development of a Teleoperated System for Humanitarian Demining," US Department of Army, 1/01 – 11/01, $602,000.

D.G. Beetner (PI 50%) and H.J. Pottinger (Co-Pi 50%), "Hardware-Software Co-Design in an Undergraduate Microcontroller Laboratory," National Science Foundation (NSF), 1/00 – 12/02, $230,609.

D.G. Beetner (PI 20%), T.H. Hubing (Co-PI 20%), R.E. DuBroff (20%), T.P. Van Doren (20%), and J.L. Drewniak (20%), "Vehicle Electrical System EMC Expert System Development," General Motors Corporation, 10/00 – 9/01, $165,081.

O.R. Mitchell (PI 25%), D.A. Summers (15%), V.S. Rao (15%), T.J. Herrick (10%), S. Kapila (10%), D.G. Beetner (5%), J.A. Stuller (5%), R.E. DuBroff (5%), V.J. Flanigan (5%), J.L. Drewniak (5%), "Multidisciplinary Research in Mine Detection and Neutralization Systems," US Department of the Army, 12/99 – 1/01, $602,000.

D.G. Beetner (PI 100%), "Non-Invasive Detection of Skin Cancer using Electrical Impedance," Oak Ridge Associated Universities Ralph E. Powe Award, 2000, $10,000 ($5,000 as part of award, $5,000 from internal match).

O.R. Mitchell (PI 25%), D.A. Summers (15%), V.S. Rao (15%), T.J. Herrick (10%), S. Kapila (10%), D.G. Beetner (5%), J.A. Stuller (5%), R.E. DuBroff (5%), V.J. Flanigan (5%), J.L. Drewniak (5%), "Multidisciplinary Research in Mine Detection and Neutralization Systems," US Department of the Army, 12/98 – 11/99, $740,000.

D.G. Beetner (PI 100%), "An Intelligent Electrode Array for Electrocardiology," University of Missouri research Board, 4/99-4/01, $34,418 (internal grant).

PUBLICATIONS:

Refereed Journal Publications
J. Zhang, J. Koo, R. Moseley, S. Herrin, X. Li, D. Beetner, D. Pommerenke, "Modeling injection of Electrical Fast Transients into power and IO pins of ICs," *IEEE Transactions on Electromagnetic Compatibility,* to appear.

M. Halligan and D. Beetner, "Maximum Crosstalk Estimation in Lossless and Homogeneous Transmission Lines," *IEEE Transactions on Microwave Theory and Techniques,* to appear.

C. Stagner, D. Beetner, S. Grant, "A Comparison of Algorithms for Detecting Synchronous Digital Devices Using Their Unintended Electromagnetic Emission," *IEEE Transactions on Electromagnetic Compatibility,* to appear.

M. Halligan and D. Beetner, "Maximum Crosstalk Estimation in Weakly Coupled Transmission Lines," *IEEE Transactions on Electromagnetic Compatibility,* to appear.

M. Halligan, D. Beetner, S. Grant, "Susceptibility Study of Audio Recording Devices to Electromagnetic Stimulations," *SAND report*, Sandia Nat. Lab., Albuquerque, NM, Rep. SAND2014-0560, Feb. 2014.

L. Ren, T. Li, S. Chandra, X. Chen, H. Bishnoi, S. Sun, P. Boyle, I. Zamek, J. Fan, D. Beetner, J. Drewniak, "Prediction of Power Supply Noise from Switching Activity in an FPGA," *IEEE Transactions on Electromagnetic Compatibility*, to appear.

C. Stagner, M. Halligan, C. Osterwise, D. G. Beetner, S. Grant, "Locating Noncooperative Radio Receivers Using Wideband Stimulated Emissions," *IEEE Transactions on Instrumentation and Measurement*, vol. 62, no. 3, pp. 667-674, March 2013.

H. Weng, D. G. Beetner, R. E. DuBroff, "Prediction of Radiated Emissions Using Near-Field Measurements," *IEEE Transactions on Electromagnetic Compatibility*, 53(4), pp 891-899, 2011.

K. Hu, D. Beetner, D. Pommerenke, J. Drewniak, "Unbalanced currents in integrated circuits and their effect on TEM cell emissions," *IEEE Transactions on Electromagnetic Compatibility*, 53(3), pp. 600-610, 2011.

H. Weng, D. G. Beetner, R. E. DuBroff, "Frequency Domain Probe Characterization and Compensation Using Reciprocity," *IEEE Transactions on Electromagnetic Compatibility*, 53(1), pp. 2-10, 2011.

X. Dong, H. Weng, D. G. Beetner, T. Hubing, "Approximation of Worst-Case Crosstalk at High Frequencies," *IEEE Transactions on Electromagnetic Compatibility*, 53(1), pp. 202-8, 2011.

C. Stagner, A. Conrad, C. Osterwise, D. Beetner, S. Grant, "A practical superheterodyne receiver detector using stimulated emissions," *IEEE Transactions on Instrumentation and Measurement*, 60(4), pp. 1461-8, 2011.

J.N. Reck, K. Hu, S. Li, H. Weng, D. S. Ramsay, M. J. O'Keefe, J. L. Drewniak, and D. Beetner, "Fabrication of Two-Layer Thin Film Magnetic Field Micro-Probes on Freestanding SU-8 Photoepoxy," *IEEE Transactions on Device and Materials Reliability,* 10(1), pp. 26-32, 2010.

M. Wu, D.G. Beetner, T. Hubing, H. Ke, S. Sun, "Statistical Prediction of "Reasonable Worst-Case" Crosstalk in Cable Bundles," *IEEE Transactions on Electromagnetic Compatibility*, 51(3), pp. 842-851, Aug. 2009.

J. Koo, L. Han, S. Herrin, R. Moseley, R. Carlton, D. Beetner, and D. Pommerenke, "A Non-Linear Microcontroller Power Distribution Network Model for Characterization of Immunity to EFTs," *IEEE Transactions on Electromagnetic Compatibility*, 51(3), pp. 611-619, Aug. 2009.

S. Deng, T. Hubing, and D. Beetner, "Using TEM Cell Measurements to Estimate the Maximum Radiation from PCBs with Attached Cables due to Magnetic Field Coupling," *IEEE Transactions on Electromagnetic Compatibility*, 50(2), pp. 419-23, May 2008.

S. Deng, T. Hubing, and D. Beetner, "Estimating Maximum Radiated Emissions from Printed Circuit Boards with an Attached Cable," *IEEE Transactions on Electromagnetic Compatibility*, 50(1), pp. 215-218, Feb. 2008.

S. Deng, T. Hubing, and D. G. Beetner, "Characterizing the Electric Field Coupling from IC Heatsink Structures to External Cables Using TEM Cell Measurements," *IEEE Transactions on Electromagnetic Compatibility,* 49(4), pp. 785-791, Nov. 2007.

H. Weng, D. G. Beetner, and R. E. DuBroff, "Estimation of High-Frequency Currents from Near-Field Scan Measurements," *IEEE Transactions on Electromagnetic Compatibility,* 49(4), pp. 805-815, Nov. 2007.

K. Hu, S. Li, D. Beetner, J. Drewniak, J. Reck, M. O'Keefe, K. Want, X. Dong, and K. Slattery, "Developing, Assessing and Applying a High-Resolution Thin-Film Magnetic Probe," *Agilent Measurement Journal*, Issue 3, pp. 43-49, Sept. 2007. (editor-reviewed publication)

X. Dong, H. Weng, D. Beetner, T. Hubing, D. Wunsch, M. Noll, H. Goksu, and B. Moss, "Detection and Identification of Vehicles Based on Their Unintended Electromagnetic Emissions," *IEEE Transactions on Electromagnetic Compatibility,* 48(4), pp. 752-759, Nov. 2006.

P. Mehta, K. Chand, D. Narayanswamy, D.G. Beetner, R. Zoughi, and W.V. Stoecker, "Microwave Reflectometry as a Novel Diagnostic Tool for Detection of Skin Cancers," *IEEE Transactions on Instrumentation and Measurement*, 55(4), pp. 1309-1316, 2006.

D. G. Beetner and R. M. Arthur, "Estimation of Heart-Surface Potentials Using Regularized Multipole Sources," *IEEE Transactions on Biomedical Engineering*, 51(8): pp. 1366-73, Aug. 2004.

D. G. Beetner, R. Joe Stanley, S. Agarwal, D. R. Somasundaram, K. Nema, B. Mantha, "Landmine Detection and Discrimination Using High-Pressure Waterjets," *Journal of Applied Signal Processing*, 2004(13): pp. 1973-84, Jan. 2004.

R. Dua, D. G. Beetner, W. V. Stoecker, D. C. Wunsch, "Detection of Basal Cell Carcinoma using Electrical Impedance and Neural Networks," *IEEE Transactions on Biomedical Engineering*, 51(1): pp 66-71, Jan. 2004.

D. G. Beetner, X. Zhou, and W. V. Stoecker, "Differentiation Among Basal Cell Carcinoma, Benign Lesions, and Normal Skin Using Electric Impedance," *IEEE Transactions on Biomedical Engineering*, 50(8): pp 1020-1025, 2003.

D. Sullins, H. Pottinger, and D. G. Beetner, "The WIMP51: A Simple Processor and Visualization Tool to Introduce Undergraduates to Computer Organization," *Computers in Education Journal*, vol. 13, pp 17-23, Jan. 2003.

D.G. Beetner and R.M. Arthur, "Direct Inference of the Spectra of Pericardial Potentials Using the Boundary-Element Method," *Annals of Biomedical Engineering*, vol. 27, pp. 498-507, 1999.

R.M. Arthur, D.G. Beetner, H.D. Ambos, and M. E. Cain, "Improved Estimation of Pericardial Potentials from Body-Surface Maps Using Individualized Torso Models," *Journal of Electrocardiology*, vol. 31, pp. 106-113, 1998.

D.G. Beetner and R.M. Arthur, "Generation of Synthetic-Focus Images from Pulse-Echo Ultrasound Using Difference Equations," *IEEE Transactions on Medical Imaging*, vol. 15, pp. 665-672, 1996.

Journal Publications Under Review
J. Zhang, X. Li, R. Moseley, D. Beetner, D. Pommerenke, "Predicting Field Coupling to an IC Using Measured Coupling Factors," *IEEE Transactions on Electromagnetic Compatibility, submitted*.

L. Ren, D. Beetner, S. Sun, M. Deo, J. Jaffari, J. Drewniak, P. Boyle, "A Vectorless Approach for Predicting Switching Activity in a Digital Circuit," *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, submitted.*

X. Gao, C. Sui, S. Hemmady, J. Rivera, S. Yakura, L. Andivahis, D. Pommerenke, D. Beetner, "Modeling Delay Variations in CMOS Digital Logic Circuits Due to Electrical Disturbances in the Power Supply," *IEEE Transactions on Electromagnetic Compatibility, awaiting final submission approval from Air Force Research Labs.*

G. Li, W. Qian, A. Radchenko, J. He, T. Van Doren, D. Beetner, D. Pommerenke, G. Hess, R. Hoeckele, "Development and Validation of an Equivalent SPICE Model for Radiation Prediction," *IEEE Transactions on Electromagnetic Compatibility, submitted*.

N. Bondarenko, Z. Li, B. Xu, G. Li, T. Van Doren, D. Loken, P. Berger, D. Beetner, "A Measurement-Based Model of the Electromagnetic Emissions from a Power Inverter," *IEEE Transactions on Power Electronics, submitted*.

Patents
D. Beetner, S. Seguin, T. Hubing, "Electromagnetic Emissions Stimulation and Detection System," Dec. 9, 2008, U.S. Patent no. 7,464,005.

S. A. Seguin, D. G. Beetner, T. H. Hubing, "Electromagnetic Emissions Stimulation and Detection System," US. Patent no. 7,853,437, Dec. 14, 2010.

D. Beetner, A. Conrad, C. Stagner, S. Grant, S. Peng, N. Bondarenko, "Detecting Superheterodyne and Homodyne Receivers by Manipulating their Incidental RF Emissions with an External Stimulation," invention disclosure, submitted Oct. 27, 2009, U.S. Prov. Patt App. No. 61/279,854.

Books and Book Chapters
D. Beetner, N. Bondarenko, S. Peng, and T. Van Doren, "Debugging of Electromagnetic Compatibility Issues". In K. Fowler (Ed.), *Managing the Development of Embedded Systems*, Elsevier press. *To appear.*

C. Stanger, S. Seguin, S. Grant, D. Beetner, "Detecting Electronic Initiators Using Electromagnetic Emissions," *Cases on Research and Knowledge Discovery*, C. W. Brown, K.A. Peters, & K. A. Nyarko (Eds), PA: IGI Global *to appear.*

Refereed Conference Proceedings

G. Li, W. Qian, A. Radchnko, G. Hess, R. Hoeckele, P. Jalbert, T. Van Doren, D. Pommerenke, D. Beetner, "Estimating the radiated emissions from cables attached to a switching power supply in a MIL-STD 461 test," 2013 IEEE International Symposium on Electromagnetic Compatibility, pp.626-631, 5-9 Aug. 2013 (Refereed paper).

X. Gao, C. Sui, D. Beetner, S. Hemmady, J. Rivera, S. Yakura, J. Villafuerte, D. Pommerenke, ""Modeling timing variations in digital logic circuits due to electrical fast transients," 2013 IEEE International Symposium on Electromagnetic Compatibility, pp.484-488, 5-9 Aug. 2013 (Refereed paper).

N. Bondarenko; P. Shao; A. Orlando; M. Koledintseva.; D. Beetner; P. Berger, "Prediction of common-mode current reduction using ferrites in systems with cable harnesses," Proc. of the 2012 IEEE International Symposium on Electromagnetic Compatibility, pp.80-84, 6-10 Aug. 2012. (Refereed paper).

D. Beetner, J. Zhang, J. Koo, R. Moseley, S. Herrin, D. Pommerenke, "Modeling Electromagnetic Coupling to Integrated Circuits," International Conference on Electromagnetics in Advanced Applications, Sept. 2012. (Refereed paper).

L. V. Grivault, M. J. Gualdoni, D. G. Beetner, "Testing the susceptibility of a high-speed integrated circuit," ASEE Midwest Section Conference, Sept. 2012. (Refereed paper).

H. Geng, D. G. Beetner, Y. Shi, "Laboratory Experiments for Introductory and Advanced VLSI Courses," ASEE Midwest Section Conference, Sept. 2012. (Refereed paper).

S. Hemmady, J. M. DelGrande, D. Beetner, D. Pommerenke, "Modeling and Experiment of High Power Radio-Frequency Effects on Printed Circuit Boards and their Embedded Chipsets," Directed Energy Symposium, Albuquerque, NM, 2012. (Refereed paper).

J. Zhang, D. Beetner, R. Moseley, S. Herrin, D. Pommerenke, "Modeling electromagnetic field coupling from an ESD gun to an IC," proc. of the 2011 IEEE International Symposium on Electromagnetic Compatibility, pp. 553-8, Aug 2011. (Refereed paper).

L. Ren, D. Beetner, S. Sun, P. Boyle, M. Scheppers, C. Stagner, M. Deo, J. Drewniak, "Vectorless Estimation of Power Consumption Variations in an FPGA," DesignCon 2011. (Refereed paper)

C. Stagner, C. Osterwise, D. Beetner, S. Grant, "Real-Time Detection of Radio Receivers Using Stimulated Emissions," ALERT RICC 2010, NorthEastern University, Boston MA, Oct. 10, 2010.

X. Li, M. Wu, D. Beetner, and T. Hubing, "Rapid Simulation of the Statistical Variation of Crosstalk in Cable Harness Bundles," proc. of the 2010 IEEE International Symposium on Electromagnetic Compatibility, July 2010. (Refereed paper).

J. Zhang, J. Koo, D. Beetner, R. Moseley, S. Herrin, D. Pommerenke, "Modeling of the Immunity of ICs to EFTs," proc. of the 2010 IEEE International Symposium on Electromagnetic Compatibility, pp. 484-9, July 2010. (Refereed paper).

C. Osterwise, S. Grant, D. Beetner, "Reduction of Noise in Near-field Measurements," proc. of the 2010 IEEE International Symposium on Electromagnetic Compatibility, July 2010. (Refereed paper).

A. Orlando, M. Koledintseva, D. G. Beetner, P. Shao, P. Berger, "Lumped-Element Circuit Model of Ferrite Chokes," proc. of the 2010 IEEE International Symposium on Electromagnetic Compatibility, July 2010. (Refereed paper).

D. Beetner, D. Carhoun, A. Conrad, S. Grant, C. Osterwise, J. Tichenor, "Verifying Neutralization of Electronically-Initiated Explosive Devices," 2009 MSS Battlefield Survivability and Discrimination conference, Feb., 2009. (abstract refereed, but paper was not. Paper is classified).

M. Wu, D. Beetner, T. Hubing, H. Ke, and S. Sun, "Estimation of the Statistical Variation of Crosstalk in Wiring Harnesses," proc. of the 2008 IEEE International Symposium on Electromagnetic Compatibility, August 2008, pp. 1-6. (Refereed paper).
     Nominated for best paper award (approximately 10 nominated from 150 papers).

I. Zamek, P. Boyle, Z. Li, S. Sun, X. Chen, S. Chandra, T. Li, D. Beetner, J. Drewniak, "Modeling FPGA Current Waveform and Spectrum and PDN Noise Estimation," DesignCon, Feb. 2008. (Refereed paper.)
     Nominated for best paper award.

S. Li, H. Bishnoi, J. Whiles, P. Ng, H. Weng, D. Pommerenke, and D. Beetner, "Development and Validation of a Microcontroller Model for EMC," EMC Europe, Oct. 2008. (Refereed paper.)

V. Kasturi and D. Beetner, "The Influence of Test Parameters on TEM Cell Measurements of ICs," proc. of the 2008 IEEE International Symposium on Electromagnetic Compatibility, August 2008, pp. 1-6. (Refereed paper).

F. Gang, W. Su, D. Pommerenke, J. Fan, D. G. Beetner, "Time Synchronized Near-field and Far-field for EMI Source Identification," proc. of the 2008 IEEE International Symposium on Electromagnetic Compatibility, August 2008, pp. 1-6. (Refereed paper).

H. Weng, D. Beetner, R. DuBroff, J. Shi, "An Application of Frequency Domain Probe Calibration and Compensation Procedures in Near-field Measurements over an Integrated Circuit," Proceedings of the 6th International Workshop on Electromagnetic Compatibility of Integrated Circuits, Nov. 2007. (Refereed paper)

T. Hubing, S. Deng, D. Beetner, "Using Electrical and Magnetic "Moments" to Characterize IC Coupling to Cables and Enclosures," Proceedings of the 6th International Workshop on Electromagnetic Compatibility of Integrated Circuits, 2007. (Refereed paper)

H. Weng, J. Shi, D. Beetner, R. DuBroff, "Compensation and Calibration of Near Field Scan Measurements for EMC Analysis, Diagnosis and Prediction," 3rd International Conference on Electromagnetic Near-Field Characterization and Imaging, June, 2007. (Refereed paper)

L. Han, J. Koo, D. Pommerenke, D. Beetner, R. Carlton, "Experimental Investigation of the ESD Sensitivity of an 8-bit Microcontroller," proc. of the 2007 IEEE International Symposium on Electromagnetic Compatibility, July 2007, pp. 1-6. (Refereed paper)

D. Beetner, H. Weng, M. Wu, T. Hubing, "Validation of Worst-Case and Statistical Models for an Automotive EMC Expert System," proc. of the 2007 IEEE International Symposium on Electromagnetic Compatibility, July 2007, pp. 1-5. (Refereed paper)

S. Li, K. Hu, D. Beetner, J. Drewniak, J. Reck, M. O'Keefe, K. Wang, X. Dong, K. Slattery, "Development and Application of a High-Resolution Thin-Film Probe," proc. of the 2007 IEEE International Symposium on Electromagnetic Compatibility, July 2007, pp. 1-5. (Refereed paper)

S. Deng, D. Pommerenke, T. Hubing, J. Drewniak, D. Beetner, D. Shin, S. Kim, H. Kwak, "Mode Suppressed TEM Cell Design for High Frequency IC Measurements," proc. of the 2007 IEEE International Symposium on Electromagnetic Compatibility, July 2007, pp. 1-6. (Refereed paper)

W.K. Al-Assadi, M. V. Joshi, S. Gosavi, D. Beetner, "Incorporating Altera FPGA Demo Boards in Computer Engineering Labs," 2007 ASEE Midwest Regional Conference. (Refereed paper)

Y. Zheng, S. Chitneni, D. Beetner, "DSP Curriculum Development for Computer Engineering using Altera's DE II FPGA Kits", 2007 ASEE Midwest Regional Conference. (Refereed paper)

K. Hu, H. Weng, D. G. Beetner, D. Pommerenke, J. Drewniak, K. Lavery, J. Whiles, "Application of Chip-Level EMC in Automotive Product Design," proc. of the 2006 IEEE International Symposium on Electromagnetic Compatibility, vol. 3, August 2006, pp. 842-848. (Refereed paper)

H. Weng, D. G. Beetner, R. E. DuBroff, "Predicting TEM Cell Measurements from Near Field Scan Data," proc. of the 2006 IEEE International Symposium on Electromagnetic Compatibility, vol. 3, August 2006, pp. 560-564. (Refereed paper)

V. Kasturi, S. Deng, T. Hubing, D. G. Beetner, "Quantifying Electric and Magnetic Field Coupling from Integrated Circuits with TEM Cell Measurements," proc. of the 2006 IEEE International Symposium on Electromagnetic Compatibility, vol. 2, August 2006, pp. 422-425. (Refereed paper)

A. Shaik, H. Weng, X. Dong, T. H. Hubing, and D. G. Beetner, "Matched Filter Detection and Identification of Electronic Circuits Based on their Unintentional

Radiated Emissions," proc. of the 2006 IEEE International Symposium on Electromagnetic Compatibility, vol. 3, August 2006, pp. 853-856. (Refereed paper)

T. H. Hubing, D. Beetner, S. Seguin, B. Moss, and M. Schmidt, "Improvised Explosive Device Detection Based on Unintentional Electromagnetic Emissions," AMEREM 2006, Albuquerque, NM, July 11, 2006.

X. Dong, S. Deng, D.G. Beetner, T. Hubing, "Effect of FPGA Floor Plan on Package Currents," EMC Compo 5th International Workshop on Electromagnetic Compatibility of Integrated Circuits, 2005. (Refereed paper).

H. Weng, X. Dong, X. Hu, D. Beetner, T. Hubing, and D. Wunsch, "Neural Network Detection and Identification of Electronic Devices Based on Their Unintended Emissions," proc. of the 2005 IEEE International Symposium on Electromagnetic Compatibility, Chicago, IL, USA, August 2005. (Refereed paper).

H. Weng, D.G. Beetner, R.E. DuBroff, and J. Shi, "Estimation of Current From Near-Field Measurements," proc. of the 2005 IEEE International Symposium on Electromagnetic Compatibility, vol. 1, Aug. 2005, pp. 222-227. (Refereed paper)

X. Dong, S. Deng, D. G. Beetner, T. H. Hubing, and T. P. Van Doren, "Determination of High Frequency Package Currents from Near-Field Scan Data," proc. of the 2005 IEEE International Symposium on Electromagnetic Compatibility, Chicago, IL, USA, August 2005. (Refereed paper)

R. Dua, B.J. Blaha, K. Gupta, V. Satagopan, D. Beetner, R.J. Stanley, and D.C. Wunsch, "Hands-On Projects and Exercises to Strengthen Understanding of Basic Computer Engineering Concepts," 2005 ASEE Annual Conference and Exposition, June 12-15 2005. (Refereed paper)

K. Chand, P. Mehta, D.G. Beetner, R. Zoughi, W.V. Stoecker, "Microwave Reflectometry as a Novel Diagnostic Method for Detection of Skin Cancers," 2005 Instrumentation and Measurement Technology Conference, Ottawa, Canada, pp. 1425-25, May 2005. (Refereed paper)

T. Hubing, D. Beetner, X. Dong, H. Weng, M. Noll, H. Goksu, B. Moss, and D. Wunsch, "Electromagnetic Detection and Identification of Automobiles," Euro Electromagnetics, Magdeburg Germany, July 2004. (Refereed paper).

H. Weng, D. G. Beetner, T. Hubing, X. Dong, R. Wiese, and J. McCallum, "Investigation of Cavity Resonances in an Automobile," 2004 IEEE Electromagnetic Compatibility Symposium. (Refereed paper).

X. Dong, S. Deng, T. Hubing, and D. G. Beetner, "Analysis of Chip-level EMI Using Near-Field Magnetic Scanning," 2004 IEEE Electromagnetic Compatibility Symposium. (Refereed paper).

X. Dong, H. Weng, D. G. Beetner, T. Hubing, R. Wiese, and J. McCallum, "A Preliminary Study of Maximum System-level Crosstalk at High Frequencies for Coupled Transmission Lines," 2004 IEEE Electromagnetic Compatibility Symposium. (Refereed paper).

Q. Yao, D. G. Beetner, and D. Wunsch, "Mobile Robot Navigation Using a Fuzzy Logic Method," Eighth International Conference on Cognitive and Neural Systems, May 19-22, 2004. (Refereed abstract).

T. Hubing, D. Beetner, S. Deng, and X. Dong, "Radiation Mechanisms For Semiconductor Devices and Packages," 2004 International Symposium on Electromagnetic Compatibility, Sendai, Japan, June 1-4, 2004. (Invited, refereed paper).

D. Beetner and H. Pottinger, "Laboratories Introducing Embedded Systems, Hardware-Software Co-Design, and Computer Organization," 38th ASEE Midwest Section Conference and Workshop, Sept. 10-12, 2003. (Refereed paper).

K. Gupta, D. G. Beetner, and W. V. Stoecker, "Diagnosis of Basal Cell Carcinoma Using Electrical Impedance: A Statistical Approach," *World Congress on Medical Physics and Biomedical Engineering*, 2003. (Refereed abstract).

L. Verma, H. J. Pottinger, and D. G. Beetner, "A Software Debugger Interface for an 8051 Hardware Model," *2003 Conference on Microelectronic Systems Education*, June 2003. (Refereed paper).

Q. Yao, D. Beetner and D. C. Wunsch II, "A RAM-Based Neural Network for Collision Avoidance in a Mobile Robot", *2003 International Joint Conference on Neural Networks* (IJCNN), pp 3157-3160, 2003. (Refereed paper).

L. Verma, D. Beetner, H. Pottinger, "A Tcl/Tk Debugging Interface for a VHDL 8051 Microcontroller Model," Mentor Users Group 2003 conference proceedings, 2003. (Refereed paper).

D. Sullins, D. Beetner, H. Pottinger, "Development of a Simple Processor and Simulator for Use in Undergraduate Coursework," *Proceedings of the 4th European Workshop on Microelectronics Education – EWME,* 2002. (Refereed paper).

D. Sullins, H. Pottinger, D. Beetner, "The WIMP51: A Simple Processor and Visualization Tool to Introduce Undergraduates to Computer Organization," ASEE, 2002, p 2232. (Refereed paper).

V. Eller, D. Beetner, J. White, H. Pottinger, "Development and Delivery of a Web-Based Seminar," ASEE, 2002, p 2236. (Refereed paper).

D. Beetner and H. Pottinger, "Laboratories Teaching Hardware-Software Co-Design: New Additions and Dissemination Via Web-Seminar," ASEE, 2002. (Refereed abstract)

S. Ranganathan, D. Beetner, R. Wiese, and T. Hubing, "An Expert System Architecture to Detect System-Level Automotive EMC Problems," *Proceedings of the 2002 IEEE EMC Symposium, Minneapolis*, pp 976-981, August 2002. (Refereed paper).

D. Beetner, S. Ranganathan, R. Wiese, T. Hubing, "Design of An Expert System to Detect Electromagnetic Compatibility Problems in the Automobile," *2002 IEEE AP-S International Symposium and USNC/URSI National Radio Science Meeting*, June 16-21, 2002. (Refereed paper).

D.G. Beetner and H.J. Pottinger, "An Assessment of Laboratories and Materials Teaching Hardware-Software Co-Design," 2001 ASEE Annual Conference and Exposition, 2001. (Refereed abstract).

D.G. Beetner, H.J. Pottinger, and K. Mitchel, "Laboratories Teaching Concepts in Microcontrollers and Hardware-Software Co-Design," *30th ASEE/IEEE Frontiers in Education Conference*, pp. S1C/1–5, 2000. (Refereed paper).

D.G. Beetner, R.M. Arthur, H.D. Ambos, and M.E. Cain, "Characterization of Spectral Features in Inferred Pericardial Potentials that Distinguish Healed Myocardial Infarct," Proceeding of the 22nd Annual International Conference of the IEEE-EMBS, July, 2000. (Refereed abstract)

D.G. Beetner and R.M. Arthur, "Noninvasive Imaging of Pericardial Spectra," Invited paper, Proceeding of the 22nd Annual International Conference of the IEEE-EMBS, July, 2000. (Refereed abstract)

R. M. Arthur and D. G. Beetner, "Improved Inference of Heart Potentials with the Multipole-Equiv Method," *International Society of Computerized Electrocardiology 25th Annual Conference*, 2000. (Refereed abstract).

H.J. Pottinger and D.G. Beetner, "Hardware-software Co-verification in an Undergraduate Laboratory," *Proceedings 1999 IEEE Computer Society International Conference on Microelectronic Systems Education*, pp. 41-42, 1999. (Refereed paper).

D.G. Beetner, H.D. Ambos, M.E. Cain, and R.M. Arthur, "Inference of Epicardial Potentials from Multipole-Equivalent Sources Using Aimed Leads," *Electrocardiology '96*, Proceedings of the 23rd International Congress on Electrocardiology, July 31 – August 4, 1996. (Refereed abstract)

D.G. Beetner, H.D. Ambos, M.E. Cain, and R.M. Arthur, "Determination of Epicardial Potentials Using Aimed Leads," *Journal of Medical and Biological Engineering and Computing*, vol. 34, sup. 1, pp. 97-98, 1996. (Refereed paper)

R.M. Arthur and D.G. Beetner, "Representation of Time-of-Flight Surfaces for Synthetic-Focus, Ultrasonic Imaging in Inhomogeneous Media," Ultrasonic Imaging, Vol. 17, pp. 57-58, 1995. (Refereed paper).

Presentations

D. Beetner, "Getting Funded through the Research Board," Invited presentation to the University of Missouri Faculty Scholars, Feb. 21-22, 2013.

D. Beetner, "TigerStrike: handheld detection of remote initiators," Research to Resilience Workshop, Boston, MA, Sept. 2012. Invited.

D. Beetner, "Modeling of Integrated Circuits for Electromagnetic Compatibility," Special session on IC-EMC, DesignCon, Feb. 2011. Invited Speaker.

D. Beetner, "Detection of electronic explosive initiators using their unintended electromagnetic emissions," ALERT RICC 2011, NorthEastern University, Boston MA, March, 2011. Invited Speaker.

D. Beetner, "Detection of electronic explosive initiators using their unintended electromagnetic emissions," ALERT RICC 2010, NorthEastern University, Boston MA, Oct. 10, 2010. Invited Speaker.

D. Beetner, "PCB Design," Fundamentals Tutorial for the IEEE EMC Symposium, July, '10. Invited Speaker.

D. Beetner, "The Current Return Path," Fundamentals Tutorial for the IEEE EMC Symposium, Aug, '09. Invited Speaker.

D. Beetner, "Detection of Electronic Devices," Presentation to the IEEE chapter at University of Arkansas, Sept. '09. Invited Speaker.

D. Beetner, "Tech Insider: si/EMC: Recent Developments in Board and System Level Simulation and IC Models," IEEE Spectrum Online Webseminar, Oct. '08. (Invited).

D. Beetner, "Inductance and Capacitance in Electrical Systems Design," Fundamentals Tutorial for the IEEE EMC Symposium, Aug, '08. Invited Speaker.

A. Conrad and D. Beetner, "Detecting Radio Transceivers by Manipulating their Unintended Emissions," Gordon-CenSSIS Research and Industrial Collaboration Conference, October, 2008.

D. Beetner, "Development and Validation of IC Models for EMC," IEEE Rock River Valley sub-section on EMC, April, '08. Invited Speaker.

D. Beetner, "Expert System EMC Analysis of Automobile Electronics," Advanced in EMC Test and Design, Clemson, SC, March 2008. Invited Speaker.

D. Beetner, "Detection of Electronic Devices," Detecting Illicit Substances: Explosives & Drugs, Sept. 2007, Invited Speaker.

D. Beetner, "Progress and Directions in IC EMC," UMR EMC Consortium Meeting, Nov. 8-9, 2005 (Archived for consortium members).

K. Hu, H. Weng, D. Beetner, K. Lavery, J. Whiles, D. Pommerenke, and J. Drewniak, "Chip-Level EMI Suppression Methods," UMR EMC Consortium Meeting, Nov. 8-9, 2005 (Archived for consortium members).

D. Beetner, "IC EMC Progress and Directions," UMR EMC Consortium Meeting, May 10-11, 2005 (Archived for consortium members).

H. Weng and D. Beetner, "Compensation of Near-Field Scan Measurements," UMR EMC Consortium Meeting, May 10-11, 2005 (Archived for consortium members).

D. Beetner and T. Hubing, "Unintentional RF Emissions for IEDs and other Electronic Devices," MASINT RF Working Group, U.S. Defense Intelligence Agency, Arlington, VA, Sept. 2004. (invited)

D. Beetner and H. Pottinger, "Hardware Software Co-Design in an Undergraduate Microcontrollers Laboratory," Engineering and Computing Education Grantees Conference, September 22-23, 2003, Washington D.C. (invited abstract)

V. Eller, J. Nolley, R. Hall, R. Davis, D. Beetner, "Development, Assessment, and Support of Advanced Learning Technologies at UMR's Instructional Software Development Center," Higher Education Learning and Information eXchange, 2002.

D. Beetner and H. Pottinger, "Hardware Software Co-Design in an Undergraduate Microcontrollers Laboratory," Engineering and Computing Education Grantees Conference, September 30-October 1, 2002, Washington D.C. (invited)

X. Dong and D. Beetner, "Estimation of Maximum System-Level Crosstalk at High Frequencies," UMR EMC Consortium Meeting, May 6-7, 2003 (Archived for consortium members).

H. Weng and D. Beetner, "PSpice Crosstalk Elements and a MATLAB GUI ," UMR EMC Consortium Meeting, May 6-7, 2003 (Archived for consortium members).

X. Dong, S. Ranganathan, and D. Beetner, "Validation of Expert System Algorithms: Common Impedance, Inductive, and Capacitive Coupling", UMR EMC Consortium Meeting, Oct. 24-25, 2002 (Archived for consortium members).

H. Weng and D. Beetner, "Resonances in a Vehicle Passenger Compartment", UMR EMC Consortium meeting, Oct. 24-25, 2002.

S. Ranganathan and D. Beetner, "Wiring Harness Crosstalk Algorithms", UMR EMC Consortium Meeting, May 15-16, 2002 (Archived for consortium members)

X. Dong and D. Beetner, "Field-to-Cable Coupling Model and Measurements", UMR EMC Consortium Meeting, May 15-16, 2002 (Archived for consortium members)

D. Beetner, "System-Level EMC Project Directions", UMR EMC Consortium Meeting, May 15-16, 2002 (Archived for consortium members)

S. Ranganathan and D. Beetner, "Predicting Wire Harness Crosstalk due to Capacitive Coupling", UMR EMC Consortium Meeting, May 15-16, 2002 (Archived for consortium members)

X. Dong and D. Beetner, "Predicting Field-to-Cable Coupling: Models and Measurements", UMR EMC Consortium Meeting, May 15-16, 2002 (Archived for consortium members)

D.G. Beetner, "Acoustic Detection of Buried Landmines," Third Annual Review of the Army research Office sponsored Multidisciplinary University Research Initiative (MURI) on Demining, Aug, 1999, Ft. Belvoir, Virginia.

W.V. Stoecker, D.G. Beetner, B. Shrestha, R.H. Moss, V.A. Samaranayake, S. Kapoor, and M. Shivappa, "Review: Digital Imaging in Dermatology," Invited presentation. Meeting of the International Society for Digital Imaging of the Skin, Washington D.C., March 8, 2001.

D. Beetner and H. Pottinger, "Materials Teaching Hardware-Software Co-Design," a 1-hour seminar conducted over the web to participants from academia and industry and from across the world, Aug. 2001. (Archived on web)

D. Beetner "Development of a Web Seminar with Live Streaming Audio," UMR Instructional Software Development Center seminar, Oct 2001. (invited)

D. Beetner, "Next Steps for Automotive EMC," UMR EMC Consortium meeting, Nov. 2001. (Archived for consortium members)

S. Ranganathan and D. Beetner "A Preliminary Inductive Coupling Algorithm", UMR EMC Consortium meeting, Nov. 2001. (Archived for consortium members).

D. Beetner, "System-Level Automotive EMC Expert System," UMR EMC Consortium meeting, May. 2001. (Archived for consortium members)

Coverage of Research in Popular Press
"Water Goes to War," Popular Science, September, 2002. (Demining work with waterjets).

Paul Eng, "Drowning Out Hidden Horrors of Past Wars?" ABC News.com, Aug. 16, 2002 (Demining work with waterjets)

"Best Inventions of 2002," Time Magazine, November, 2002. (Our waterjet demining apparatus included in list).

KMOX radio report on demining work, January 2003 (including excerpts of interview with D. Beetner).

"Electrical Device Detects Skin Cancer," Cover article for health section of Springfield Newsleader, July 1, 2003.

Results Radio report on skin cancer work, June 2003.

"Diagnosing Skin Cancer in a Zap," MSM-UMR Alumnus Magazine, pp. 30, Fall 2003.

KUMR's "Technofiles" (half-hour guest appearance discussing work on IEDs), 11/2004.

"EEs Seek Way to ID Triggers of Iraq's IEDs," EE Times, Oct. 8, 2004.

"Suchgerat fur Bomben," Der Spiegel, Sept. 2004.

"Electromagnetic Radiation Locates Radio Receivers," by Steve Bush, Electronics Weekly, Sept. 29, 2004.

"UMR Work Could Save Troops," Sunday front-page article, Springfield News-Democrat, Oct. 24, 2004.

"Making Waves Against Bombers," The Engineer, Sept. 24, 2004.

"Researchers look for way to interrupt Insurgents' Bombings," Kansas City Star, Oct. 26, 2004.

"UM-Rolla Team Designs Iraq Safety Tool," Columbia Daily Tribune, Oct. 26, 2004.

"Researchers Look for way to Defuse Insurgent Bombs," St. Louis Post Dispatch, Sunday, Oct. 31, 2004.

"Ground Breaking Skin Cancer Research at UMR," The Missouri Miner, Nov. 11, 2004.

"The IED Solution," DefenseWatch, Nov. 16, 2004.

TEACHING

Lecture:

Semester(s)	Course #	Course Title	Student Evaluation[1]	Level	University
S14,S13, S12, S11, S10, W07, W05, F03	CpE411	Advanced VLSI Dsgn	3.7,3.3, 3.7, 3.0, 2.8, 3.6, 3.8, 3.3	Grad.	MS&T
S13, F09, S08, S07, S06	EE/CpE392	Senior Design II (avg.)	3.5, 3.2, 3.0, 3.4, 3.4	Senior	MS&T
S10, F09, S09, F07,F06, F05, F01	EE/CpE391	Senior Design I (avg.)	3.5, 2.9, 3.3, 3.0, 3.0, 3.1, 3.1	Senior	MS&T
F12, F10, F07, F06	EE371	Grounding and Shielding	3.6, 3.9, 3.3, 3.3	Senior/ Grad.	MS&T
F11, F08, W04, W03, F02	CpE311	Intro. to VLSI Design	3.5, 3.4, 3.4, 3.4, 2.9	Senior/ Grad.	MS&T
W01	CpE318	Digital System Modeling	3.0	Senior/ Grad.	MS&T
F05, F04, W02,F01,F00, W00, F99	CpE213	Digital Systems Design	3.2, 3.2, 3.7, 3.4, 3.3, 3.3, 2.4	Junior/ Senior	MS&T
S00	CpE300	Special Problems	N/A	Sen./ Grad	MS&T
S99	CpE400	Special Problems	N/A	Grad.	MS&T
S09, F04, W99	CpE111	Intro to Computer Eng.	3.4, 3.4, 3.2	Soph.	MS&T
W98	EE327	Intro to Elect. Crkts II	N/A	Junior	SIUE
W98, F97	EE326	Intro to Elect. Crkts I	N/A	Junior	SIUE

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[1] Evaluations at S&T are out of 4.0. Typical average is 2.7-2.9. Values are averaged across sections when appropriate.

Lab Coordination:

Semester(s)	Course #	Lab Title	Level	University
W02, F04	CpE214	Digital Eng. Lab II	Junior	S&T
F99, W99, F00, W00, W01, F01, F02	CpE112	Computer Eng. Lab I	Soph.	S&T
W98	EE327	Intro to Electronic Crkts II	Junior	SIUE
W98, F97	EE326	Intro to Electronic Crkts I	Junior	SIUE

Courses Developed
- CpE411: Advanced VLSI Design, a course covering advanced topics in the design of large-scale, high-performance, low-power, and mixed-signal integrated circuits.
- Laboratories for CpE214: Digital Systems Design. Developed as part of an NSF grant, these laboratories teach concepts of embedded systems, hardware-software co-design, and computer organization. Efforts included development of several hardware models and software visualization tools and a laboratory manual.
- Laboratories for CpE112: Introduction to Computer Engineering. Efforts included major modifications to existing laboratory manual, including the addition of several new labs.
- Significant modifications to CpE 213 – Digital Systems Design, CpE 311 – Introduction to VLSI Design, and EE 371 – Gounding and Shielding, including development of a video lecture series.

Distance and Video Courses
- EE 371: Interference Control in Electronic Systems Design, F12 (Distance course)
- EMC Principles 3rD Edition, non-credit video lecture course licensed to a number of companies and individuals (2013)

Students Supervised
Graduated 22 MS students and 4 PhD students
Currently supervising 2 MS and 4 PhD students
Financially supported/supervised 15 undergraduates as participants in my research

Graduate Students:
Amit Raikar, *Improving VPN Performance: Security Analysis, CORBA-Based Mechanisms, and Application to a Medical Research Instrument*, MSCpE, 2000 (Financially supported).

Venkata Sateesh Gudla, *A Medical Instrument for Body-Surface Mapping: UML Model, Hardware Design, and VHDL Simulation*, MSEE, 2000 (Financially supported).

Manjunath Shivappa, *Detection of skin cancer with electrical impedance: A study of indices and a finite element model*, MSEE, 2001 (Financially supported).

Sanat Kapoor, *Bioelectric Impedance Techniques for Clinical Detection of Skin Cancer*, MSEE, 2001 (Financially supported).

Lokesh Verma, *Development of Educational Materials Teaching Hardware-Software Co-Design: Laboratories and a Debugger Interface for an 8051 VHDL Model*, MSCpE, 2002 (Financially supported).

Xiangyou Zhou, *Studies of a Skin Impedance Model for Cancer Detection*, MSCpE, 2002.

Sreenivas Ranganathan, *A System-Level Automotive EMC Expert System*, MSEE, 2002 (Financially supported).

Bhargav Mantha, *Waterjet Based Demining Using Acoustics with Maximum-Likelihood and Distance-Based Detection Techniques*, MSEE, 2003 (Financially supported).

Pratik Mehta, *Microwave Reflectometry: A Novel Diagnostic Method for Detection of Skin Cancer,* MSEE 2004

David Spinden, *Using Handel-C to Design Complex Hardware: The Right Tool Can Make Decoding Simpler*, MSEE 2004. (Not supported)

Kapil Gupta, *Detection of Skin Cancer Using Electrical Impedance, An Electrical Model of Skin and Statistical Methods*, MSEE, 2004 (Financially supported).

Qiang Yao, *Mobile Robot Navigation Using Ram-Based Neural Network and Fuzzy Logic Methods,* MSEE, 2004. Co-advised with D. Wunsch (Financially supported).

Xiaopeng Dong, *Estimation, Modeling and Identification of Electromagnetic Crosstalk*, PhDEE, 2005 (Financially supported).

Deepak Narayanswamy, *Feasibility Study of Instruments for EIT and Magnetic Induction Method*, MSEE, 2006 (Not supported).

Haixiao Weng, *Measurement and Application of Near-Field Scan Data: Prediction of Currents, Radiated Emissions, and Probe*, PhDEE, 2006 (Financially supported).

Vijay Kasturi, *The Influence of Printed Circuit Board Design on Tem Cell Measurements*, MSEE, 2007. Not supported.

Shaowei Deng, *Innovative Applications of Tem Cell Measurements in Predicting Radiated Emissions Due to Common-Mode Current on Printed Circuit Boards*, PhDEE, 2007. Co-advised with T. Hubing. (Financially supported).

Meilin Wu, *Statistical Estimation of Crosstalk for Cable Bundles*, MSEE, 2008 (Financially supported).

Shaohua Li, *Development and Validation of a Microcontroller Emissions Model*, MSEE, 2008. Co-advised with J. Drewniak. (Financially supported).

Andrew Conrad, *Improved Detection of Radio Receivers by Manipulating their Unintended Emissions through External Electromagnetic Stimulation*, MSEE, *2009*. (Financially supported).

Gary Black, *Device Characterization, Disruption, and Verification*, MSEE, 2009. (Financially supported).

Sarah Seguin, *Detection of Regenerative Receivers using their Unintended Electromagnetic Emissions*, PhDEE, 2009 (Financially supported).

Matt Halligan, *Detection and Neutralization of Electronic Devices*, MSEE, *2010.* (Financially supported).

Xiang Li, *Estimation of the Statistical Variation of Crosstalk in Cable Harness Bundles*. MSEE, *2010.* (Financially supported).

Matt Schepers, *The Creation of Intentional EMI and a Study of Its Effects On Embeded Electronics*, MSEE, *2010.* (Financially supported).

Vijay Kanagachalam, *Electromagnetic Compatibility of Integrated Circuit Clock Design*, MSEE, 2012. (Financially supported).

Natalia Bondarenko, *Modeling of Power Electronic Systems*, PhDEE, *in progress* (Financially supported).

Matt Halligan, *Analytic and Worst-Case Models for Predicting Statistical and Worst-Case Emissions and Crosstalk*, PhDEE, *in progress* (Financially supported).

ChunChun Sui, *Statistical Prediction of Power Supply Noise and Jitter*, PhDCpE, *in progress* (Financially supported).

Jingnan Pan, (co-advisor), *to be determined*, PhDEE, *in progress*.

Mihir Suchak, *On-die Detection of Electromagnetic Events*, MSEE, *in progress*.

Chunyu Wang, *to be determined*, MSEE, *in progress*.

Major activities performed as the Assoc. Chair for Comp. Eng., 2005-2009

Served as the Associate Chair for Computer Engineering at MS&T from 2005-2009. Responsibilities include development and maintenance of undergraduate curriculum, management of transfer courses, substitutions, and waivers, solving "tricky" advising issues for faculty and students, undergraduate recruiting (meeting with students and parents, presentations to potential students, managing CpE recruiting activites, etc), maintenance of CpE course quality, CpE course offerings and teaching assignments, and general departmental leadership. Significant accomplishments include:

- Major revision of the Computer Engineering curriculum to include new courses in electronics and digital signal processing, to significantly tighten course requirements for computer architecture and networking, to stiffen grade requirements in required courses, and to ensure quality of transfer courses in required areas by instituting "advancement" exams for these courses.
- Successful completion of 2008 ABET accreditation of CpE program. Responsible, along with associate chair for EE and department chair, for developing and implementing assessment plan, writing report, conducting visit, and all other major requirements for accreditation. CpE program was accredited with no weaknesses and only 2 concerns, among the best outcomes at MS&T.

- Major revision of the CpE PhD qualifying exam to include both a morning "breadth" exam with firm requirements to demonstrate abilities in several area and an afternoon exam with similar firm requirements to demonstrate depth.
- Development of clear emphasis areas in CpE with associated course recommendations.
- Major update of undergraduate laboratory facilities with $20k grant from Garmin.
- Development of coordinated 9-semester program to allow students to obtain dual B.S. degrees in computer engineering and computer science or computer engineering and electrical engineering.

Activities performed to improve teaching and advising ability

NSF-sponsored National Effective Teacher's Institute 3-day workshop, 1999.

Workshop: "Learning about Learning Communities: Taking Student Learning Seriously," 1999.

2-day workshop "ABET Engineering Criteria 2000 faculty workshop," 2000.

Skillpath Seminar "Managing Multiple Projects, Objectives, and Deadlines", 2000.

Voluntary assessment of materials I developed to teach hardware-software co-design assessed by an NSF-sponsored reviewer, 2000.

Preview, Registration, and Orientation workshop, 2001.

BlackBoard course development tool workshop, 2001.

Writing-center workshop "Professional Writing: Five Steps to Clearer Prose," 2001.

Regular participation in Toastmasters, a group dedicated to improving public speaking skills, 1999-2003.

Regular participation in UMR's New Faculty Forum, 1998-2000.

Regular participation and attendance of educational conferences (ASEE 1999; FIE 2000, ASEE 2001, ASEE 2002, ASEE 2004, ASEE 2005), and NSF educational workshops (2000, 2002, 2003).

University of Missouri Leadership Development Program participant, 2011-2012

Other teaching activities

- Visiting instructor at ESIGELEC, Rouen, France, for 20-hour course "Topics in Embedded Systems," Dec. '06, Jan. '07, Dec. '07, Jan. '08, Jan. '09., Jan. 10, Jan. 11, Jan. 12, Dec. 12., Jan. 14.
- Laboratory EMC demonstrations, IEEE EMC Symposium, Aug. '06, July '07
- Presenter, EMC Fundamentals Tutorials, IEEE EMC Symposium, Aug. '08, Aug. '09, Aug. '10.
- Instructor, EMC Short Course (for engineers in industry), 2000, 2001, 2002, 2003.
- Developed DVD short-course for industry on "EMC Principles", 2013.
- Instructor/director of the CHIPS/Cyberminer camp for high-school students interested in careers in computer engineering, 2008, 2009, 2010, 2011, 2012, 2013