

Prof. Roger A. Dougal

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Educational History

Ph.D	Electrical Engineering	Texas Tech University	1983
M.S.	Electrical Engineering	Texas Tech University	1980
B.S.	Electrical Engineering	Texas Tech University	1978

Research Interests

Professor Dougal is Director of the Virtual Test Bed project, a multi-disciplinary, multi-university effort to develop a comprehensive simulation and virtual prototyping environment for advanced power systems, integrating power electronics, electromechanics, electrochemistry, and controls into a common testbed. The VTB is unique in allowing the simulation of multi-disciplinary systems by importing models from discipline specific source languages to a common workspace. Prof. Dougal's expertise also includes power electronics, physical electronics, and electrochemical power sources. He is a member of the Board of Directors of the Electric Ship R&D Consortium.

Experience

2006 – present	<i>Thomas Gregory Professor</i> of EE, Univ. of South Carolina
2001 – 2006	<i>Professor and Associate Chair</i> of EE, Univ of South Carolina
1997 - 2001	<i>Professor</i> , Dept. of Electrical Engineering, Univ. of South Carolina.
1987 - 1997	<i>Associate Professor</i> , Department of Electrical and Computer Engineering, Univ. of South Carolina.
1989 Summer,	<i>Engineer</i> , photoconductive switching research program at Lawrence Livermore National Laboratory, Livermore, CA.
1983 - 1987	<i>Assistant Professor</i> , Department of Electrical and Computer Engineering, Univ. of South Carolina.
1978-1982,	<i>Research/Teaching Assistant</i> , Department of EE, Texas Tech University.
Summer 1978, '79	<i>Graduate Research Assistant</i> , Applied Photochemistry Division, Los Alamos National Laboratory.

Honors and Awards

Thomas Gregory Professorship 2006 - present
Research Achievement Award, USC College of Engineering and IT, 2006
Palmetto Pillar Award for Technology in Education, 2004 as co-chair of FIRST Robotics committee
Senior Member of IEEE
Carolina Research Professor from 1986 - 1995
Samuel Litman Distinguished Professor of Engineering, 1990
Member of Honor Societies Phi Kappa Phi, Eta Kappa Nu, Tau Beta Pi, Phi Eta Sigma

Memberships

IEEE Circuits and Systems Society, IEEE Power Electronics Society, IEEE Standards Association,
American Society of Naval Engineers, American Society of Engineering Educators

PUBLICATIONS

Journals

1. A Compact Digitally-Controlled Hybrid Fuel Cell/Battery Power Source, Z. Jiang and R. Dougal, IEEE Transactions on Industrial Electronics, Vol. 53, No. 4, pp. 1094-1104, August 2006.

2. Dynamic Centrifugal Compressor Model for System Simulation, W. Jiang, J. Khan, R. A. Dougal, *Journal of Power Sources*, Vol.158, Issue 2, pp. 1333-1343, August 2006.
3. Power Anomaly Effects and Costs in Low-voltage Mobile Power Systems, S. Liu, C. Singer, R. Dougal, *IEEE Trans on Aerospace and Electronic Systems*, Vol. 42, No. 2, pp. 612-624, April 2006.
4. Miniature Circularly Polarized Rectenna with Reduced out of Band Harmonics, M. Ali, G. Yang, R. Dougal, *IEEE Antennas and Wireless Propagation Letters*, Vol. 5, pp. 107-110, March 2006.
5. Design of an Autonomous Photovoltaic Power Plant for Telecommunication Relay Station, S. Liu, R. Dougal, E. Solodovnik, *IEEE Proceedings on Generation, Transmission, and Distribution*, Vol. 152, No. 6, pp. 745-754, November 2005.
6. A New Circularly Polarized Rectenna for Wireless Power Transmission and Data Communication, M. Ali, G. Yang, R. Dougal, *IEEE Antennas and Wireless Propagation Letters*, Vol. 4, pp. 205-208, July 2005.
7. A Wideband Circularly Polarized Microstrip Patch Antenna for 5-6 GHz wireless LAN Applications, G. Yang, M. Ali, R. Dougal, *Microwave and Optical Techniques Letters*, Vol. 45, No 4, pp 279-285, May 2005.
8. Wideband Circularly Polarized Rectenna for Wireless Power Transmission and Data Communication," M. Ali, G. Yan, R. Dougal, *IEEE Antennas and Wireless Propagation Letters*, Vol. 4, pp. 25-28, April 2005.
9. Design and Simulation of a Permanent-Magnet Electromagnetic Aircraft Launcher, D. Patterson, A. Monti, C. W. Brice, R. A. Dougal, R. O. Pettus, S. Dhulipala, D. Kovuri, T. Bertocelli, *IEEE Transactions on Industry Applications*, Vol. 41, No. 2, pp. 566-575, March/April 2005.
10. A Simplified Physics-Based Nickel Hydrogen Battery Model, S. Liu, R. A. Dougal, J. Weidner, L. Gao, *Journal of Power Sources*, Vol. 141, No. 2, pp. 326-339, March 2005.
11. Simulation of Thermally Coupled Metal-hydride Hydrogen Storage and Fuel Cell Systems, Z. Jiang, R.A. Dougal, S. Liu, S.A. Gadre, A. D. Ebner, J.A. Ritter, *Journal of Power Sources*, Vol. 142, pp. 92-102, March 2005.
12. Real-Time Strategy for Active Power Sharing in a Fuel Cell Powered Battery Charging Station, Z. Jiang and R. Dougal, *Journal of Power Sources*, Vol. 142, pp. 253-263, March 2005.
13. Resistive Companion Modeling of Batteries in a Virtual Test Bed, Q. Zhang, Q. Guo, S. Liu, R. A. Dougal, R. E. White, *Journal of Power Sources*, Vol. 141, pp. 359-368, March 2005.
14. A Virtual Environment for Remote Testing of Complex Systems, F. Ponci, L. Cristaldi, A. Ferrero, A. Monti, W. McKay, R.A. Dougal, *IEEE Transactions on Instrumentation and Measurement*, Vol. 54, No. 1, pp. 123-133, February 2005.
15. Analysis of an Automatic Energy Recovery System for Partially Spent Batteries, R. A. Dougal, Z. Jiang, L. Gao, *Journal of Power Sources*, Vol. 140, Issue 2, pp. 400-408, February 2005.
16. Effectiveness Analysis of Energy Reclamation from Partially Depleted Batteries, R. A. Dougal, L. Gao, Z. Jiang, *Journal of Power Sources*, Vol. 140, Issue 2, pp. 409-415, February 2005.
17. Evaluation of Active Hybrid Fuel Cell/Battery Power Sources, L. Gao, Z. Jiang, R. A. Dougal, *IEEE Transactions on Aerospace and Electronic Systems*, Vol. 41, No. 1, pp. 346-355, January 2005.
18. Flexible Multiobjective Control of Power Converter in Active Hybrid Fuel Cell/Battery Power Sources, Z. Jiang, L. Gao, R. A. Dougal, *IEEE Transactions on Power Electronics*, Vol. 20, No. 1, pp. 244-253, January 2005.
19. Power Enhancement of an Actively-Controlled Battery/Ultracapcitor Hybrid, L. Gao, R. Dougal, S. Liu, *IEEE Transactions on Power Electronics*, Vol. 20, No. 1, pp. 236-243, January 2005.
20. Mathematical Model of a Direct Methanol Fuel Cell, Brenda L. Garcia, Vijay A. Sethuraman, John W. Weidner, Ralph E. White, and Roger Dougal, *Journal of Fuel Cell Science and Technology*, Vol. 1, pp. 43-48, November 2004.
21. Maximum Power Tracking and Pulse-Width-Modulated Shunt for Satellite Power Systems, S. Liu, R. A. Dougal, E. V. Solodovnik, *Journal of Propulsion and Power*, Vol. 20, No. 5, pp. 911-918, September/October 2004.
22. VTB-Based Design of a Standalone Photovoltaic Power System, S. Liu, R. A. Dougal, E. E. Solodovnik, *International Journal of Green Energy*, Vol. 1, No. 3, pp. 279-300, September 2004.

23. Power Controller Design for Maximum Power Tracking in Solar Installations, E. V. Solodovnik, S. Liu, R. A. Dougal, *IEEE Transactions on Power Electronics*, Vol. 19, No. 5, pp. 1295-1304, September 2004.
24. Synergetic Control for Power Electronics Applications: A Comparison with the Sliding Mode Approach, E. Santi, A. Monti, D. Li, K. Proddutur, R.A. Dougal, *Journal of Circuits, Systems and Computers*, Vol. 13, No. 4, pp. 737-760, August 2004.
25. Synergetic Control of Power Converters for Pulse Current Charging of Advanced Batteries from a Fuel Cell Power Source, Z. Jiang, R.A. Dougal, *IEEE Trans on Power Electronics*, Vol. 19, No 4, pp. 1140-1150, July 2004.
26. Power Coordination in a Fuel-cell-battery Hybrid Power Source using Commercial Power Controller Circuits, M. J. Blackwelder, R. A. Dougal, *Journal of Power Sources*, Vol. 134, No.1, pp. 139-147, July 2004.
27. Control Strategies for Active Power Sharing in a Fuel-cell-powered Battery Charging Station, Z. Jiang, R.A. Dougal, *IEEE Trans on Industry Applications*, Vol. 40, No. 3, pp. 917-924, May/June 2004.
28. A Thin Wideband Microstrip Patch Antenna with Two Adjacent Slots, Y. Guangli, M. Ali, R. Dougal, *Microwave and Optical Technology Letters*, Vol. 41, No. 4, pp. 261-266, May 2004.
29. Design and Experimental Tests of Control Strategies for Active Hybrid Fuel Cell/battery Power Sources, Z. Jiang, L. Gao, M.J. Blackwelder, R.A. Dougal, *Journal of Power Sources*, Vol. 130, pp. 163-171, May 2004.
30. An Actively Controlled Fuel Cell/battery Hybrid to meet Pulsed Power Demands, L. Gao, Z. Jiang, and R.A. Dougal, *Journal of Power Sources*, Vol. 130, pp. 202-207, May, 2004.
31. Symbolically-aided Model Development for an Induction Machine in Virtual Test Bed, W. Gao, E. V. Solodovnik, R. A. Dougal, *IEEE Trans on Energy Conversion*, 19, No. 1, pp. 125-135, March 2004.
32. Ultracapacitor Model with Automatic Order Selection and Capacity Scaling for Dynamic System Simulation, R. A. Dougal, L. Gao, S. Liu, *Journal of Power Sources*, Vol. 126, No. 1-2, pp. 250-257, February 2004.
33. Synergetic control for DC-DC Boost Converter: Implementation Options, E. Santi, A. Monti, D. Li, K. Proddutur, R. A. Dougal, *IEEE Transactions on Industry Applications*, Vol. 39, No. 6, pp. 1803-1813, November/December 2003.
34. Application of VTB in Design and Testing of Satellite Electrical Power Systems, Z. Jiang, R. Dougal, S. Liu, *Journal of Power Sources*, Vol. 122, No. 1, pp. 95-108, July 2003.
35. Design and Testing of Spacecraft Power Systems using VTB, Z. Jiang, S. Liu, R.A. Dougal, *IEEE Trans on Aerospace and Electronics Systems*, Vol. 39, No 3, July 2003.
36. Rapid prototyping of digital controls for power electronics, A. Monti, E. Santi, R.A. Dougal, M. Riva, *IEEE Trans on Power Electronics*, Vol. 18, No 3, pp. 915-923, May 2003.
37. Design and Testing of a Fuel-Cell-Powered Battery-Charging Station, Z. Jiang and R. Dougal, *Journal of Power Sources*, Vol. 115, No. 2, pp. 279 - 287, April 2003.
38. Dynamic Lithium Ion Battery Model for System Simulation, *IEEE Transactions on Components and Packaging Technology*, Gao, L., S. Liu, R. A. Dougal, Vol. 25, No. 3, pp 495-505, September 2002.
39. Virtual Test Bed for Advanced Power Sources, R.A. Dougal, M. Blackwelder, S. Liu, L. Gao, *Journal of Power Sources*, Vol. 110, No 2, pp. 285-294, August 2002.
40. Mathematical Modeling of Lithium and Nickel Battery Systems, Parthasarathy M. Gomadam, John W. Weidner, Roger A. Dougal, Ralph E. White, *Journal of Power Sources* Vol. 110, No 2, pp. 267-284, August 2002.
41. Dynamic multi-physics model for solar array, Shengyi Liu, Roger A. Dougal, *IEEE Trans on Energy Conversion*, Vol. 17, No. 2, pp. 285-294, June 2002.
42. Experimental Characterization of Hybrid Power Systems under Pulse Current Loads, C. E. Holland, J. W. Weidner, R. A. Dougal, and R. E. White. *Journal of Power Sources*, 109, No. 1, pp. 32-37, June 2002.
43. A Virtual Prototype for Hybrid Electric Vehicle, Lu. Gokdere, K. Benlyazid, R. A. Dougal, E. Santi, C. W. Brice, *Mechatronics*, Vol. 12, No. 4, pp. 575-593, May 2002.
44. Power and Life Extension of Battery-Ultracapacitor Hybrids. S. Liu, R.A. Dougal, R.E. White. *IEEE Trans on Components and Packaging Technologies*, 25, No 1, pp. 120-131, March 2002.

45. Resistive Companion Battery Modeling for Electric Circuit Simulations, B. Wu, R. Dougal, R.E. White, *Journal of Power Sources*, Vol. 93, pp. 186-200, 2001.
46. Heat Treatment of Metal Surfaces by a Conformal Electron Beam, S. Liu, R. A. Dougal, J.S. Lyons, *ASME J of Engineering Materials and Technology*, Vol. 123, pp. 210-215, April 2001.
47. High Performance Micropane Electron Beam Window, R. A. Dougal, S. Liu, *Journal of Vacuum Science and Technology B*, Vol. 18, No 6, pp. 2750-2756, November/December 2000.
48. An Analytical Solution to General Effective Medium Equation, S Liu, R.A. Dougal, *Journal of Materials Science Letters*, Vol. 18, pp. 1929-30, December 1999.
49. Review of Technologies for Current-limiting Low-voltage Circuit Breakers, C. W. Brice, R.A. Dougal, and J.L. Hudgins, *IEEE Transaction on Industry Applications*, Vol. 32, No. 5, pp. 1005-1010, 1996.
50. Polymer Current Limiters: Affordable Protection for the Navy's Electrical and Electronic Components, C. Singer, R. Dougal, A. Duggal, K. Palmer, *ASNE Journal*, Vol. 108, No. 4, pp. 31-34, 1996.
51. Conformal Plasma Cathode for Surface Hardening of Metals, R. A. Dougal and S. Liu, *IEEE Trans. on Plasma Science*, Vol. 24, No 1, pp. 173-181, February 1996.
52. Benzene Destruction in Aqueous Waste - Gamma Irradiation Experiments, W. J.Cooper, R.A. Dougal, M. G. Nickelsen, T.D. Waite, C.N. Kurucz, K. Lin, J.P. Bibler, *Radiation Phys. and Chem.*, Vol. 48, No. 1, pp. 81-87, 1996.
53. Current Limiting Thermistors for High Power Applications, R.A. Dougal, *IEEE Trans. on Power Electronics*, Vol. 11, No. 2, pp. 304-310, March 1996.
54. Initial Velocity Effect on Space Charge Limited Currents, S. Liu and R. A. Dougal, *J. Application Physics*, Vol. 78, No. 10, pp. 5919-25, November 1995.
55. Streamer Model for Ionization Growth in a Photoconductive Power Switch, J. L. Hudgins, D. W. Bailey, R.A. Dougal, V. Venkatesan, *IEEE Transactions. on Power Electronics*, Vol. 10, No. 5, pp. 615-620, 1995.
56. Transient Current Interruption Mechanism in a Magnetically Delayed Vacuum Switch, G. Morris, Jr., and R.A. Dougal, *Journal of Applied Physics*, Vol. 73, No. 4, pp. 1627-1633, February 1993.
57. Closing/Opening Switch for Inductive Energy Storage Applications, R.A. Dougal, G. Morris, *IEEE Transactions. on Plasma Science*, Vol. 20, No. 1, pp. 42-46, 1992.
58. Low-loss, High-repetition-rate Vacuum Switching, R.A. Dougal, G. Morris, G.D. Volakakis, *IEEE Transactions. on Plasma Science*, Vol. 19, No. 5, pp. 976-988, 1991.
59. Simulation of Magnetic Switching Action in High Power Systems, H.E. Rhinehart, R. A. Dougal, W. C. Nunnally, *IEEE Transactions on Magnetics*, Vol. 26, No. 2, pp. 1088-1095, March 1990.
60. 45 Degree Insulator Flashover; A review and new results, P. A. Arnold, J.E. Thompson, T.S. Sudarshan, and R.A. Dougal, *IEEE Transactions on Electrical Insulation*, Vol. EI-23, No. 1, pp. 17-25, February 1988.
61. Degradation due to Wet Hydrogen Firing on High Voltage Performance of Alumina Insulators in Vacuum Applications, H.C. Miller, N.C. Jaitly, T.S. Sudarshan, R.A. Dougal, *IEEE Transactions on Electrical Insulation*, Vol. EI-22, No. 4, pp. 447-452, August 1987.
62. Partial Discharge Characteristics in Barium Titanate Multi-layered Structures: Effect of Material and Structural Parameters, D.D. Chang, T.S. Sudarshan, R.A. Dougal, J.E. Thompson, N.H. Chan, B.S. Rawal, *IEEE Trans. on Electrical Insulation*, Vol. EI-22, No. 4, pp. 489-495, August 1987.
63. Mechanisms of Surface Flashover along Solid Dielectrics in Compressed Gases - A Review, T.S. Sudarshan and R. A. Dougal, *IEEE Transactions Electrical Insulation*, Vol. EI-21, No. 5, pp. 727-746, 1986.
64. Fundamental Processes in the Laser-Triggered Electrical Breakdown of Gases: Unconventional Geometries, R.A. Dougal, P.F. Williams, *Journal of Applied Physics*, Vol. 60, pp. 4240-4247, 1986.
65. Fundamental Processes in Laser Triggered Electrical Breakdown of Gases, R.A. Dougal, P.F. Williams, *Journal of Applied Physics*, 17, pp. 903-918, 1984.
66. Pre-Breakdown and Breakdown Phenomena Along PMMA Surfaces in Vacuum and Nitrogen Gas Stressed by 60 Hz Voltages, J. Lewis, T.S. Sudarshan, J.E. Thompson, D. Lee, and R.A. Dougal, *IEEE Transactions on Electrical Insulation*, Vol. EI-19, pp. 512-518, 1984.

67. Time Resolved Two-Dimensional Imaging of Ground State Species Using Laser Induced Fluorescence, R.A. Dougal, P.F. Williams, D.C. Pease, *Review of Scientific Instruments*, Vol. 54, pp. 572-573, May 1983.
68. Simple Powerful Tunable Single-Mode and Mode-Locked TEA CO₂ Laser, R.A. Dougal, M.A. Gundersen, P.F. Williams, *Review of Scientific Instruments*, Vol. 53, pp. 181-183, February 1982.
69. A Study of Selective Absorbers for Single Mode Operation of CO₂ TEA Lasers, T.A. Yocum, K. Schoenbach, R.A. Dougal, M.A. Gundersen, P.F. Williams, *IEEE Journal of Quantum Electronics*, Vol. QE-16, pp. 1192-1194, 1980.
70. Tunable Single-Mode Operation of a CO₂ Laser by Means of Selective Absorbers, M.A. Gundersen, R.A. Dougal, C.R. Jones, J.M. Telle, *IEEE Journal of Quantum Electronics*, Vol. QE-15, pp. 125-128, 1979.
71. Longitudinal Mode Control of a CO₂ Laser by Means of Intracavity Absorbers, R.A. Dougal, C.R. Jones, M.A. Gundersen, L.Y. Nelson, *Applied Optics*, Vol. 18, pp. 1311-1313, 1979.

Proceedings

1. Multidisciplinary Simulation Tools for Design of Advanced Naval Propulsion Systems," R. Dougal, A. Monti, ASNE Advanced Naval Propulsion Symposium, Arlington, VA, October 2006.
2. Analysis of Transient Signatures of Arc Faults in Power Distribution Systems via Time-Frequency Analysis," P. Crapse, J. Wang, Y. J. Shin, R. Dougal, *Proceedings of SPIE-Advanced Signal Processing Algorithms, Architectures, and Implementations X*, SPIE, Vol. 6313, pp. 63130 U-1-12, San Diego, CA, August 2006.
3. A Modular Real-Time Simulation Platform Based on the Virtual Test Bed, A. Monti, R. A. Dougal, H. P. Figueroa, J. L. Bastos, invited to IEEE International Symposium on Industrial Electronics, pp. 1537-1541, Montreal, Canada, July 2006.
4. General Synergetic Control Strategies for Arbitrary Number of Paralleled Buck Converters Feeding Constant Power Load: Implementation of Dynamic Current Sharing, I. Kondratiev, R. Dougal, *IEEE International Symposium on Industrial Electronics*, pp. 257-261, Montreal, Canada, July 2006.
5. Multidisciplinary Simulation of Power Electronic Systems," R. A. Dougal, A. Monti, SCS International Conference on Modeling and Simulation – Methodology, Tools, Software Applications, pp. 177-182, Calgary, Canada, July 2006.
6. Solid-state Over-current Protection for Industrial DC Distribution Systems, C. Jin, R. A. Dougal, S. Liu, 4th International Energy Conversion Engineering Conference, pp. AIAA-2006-4023, San Diego, California, June 26-29, 2006
7. The Incremental Design Process for Power Electronic Building Blocks, A. Monti, R. Dougal, F. Ponci, Invited to IEEE Power Engineering Society Annual Meeting, June 2006.
8. Nonlinear Synergetic Control for m Parallel-Connected DC-DC Buck Converters: Droop Current Sharing, I. Kondratiev, E. Santi, R. Dougal, *Proc. IEEE Power Electronics Specialists Conference*, pp. 220-226, Jeju, Korea, June 2006.
9. A Miniature Packaged Rectenna for Wireless Power Transmission and Data Telemetry, M. Ali, G. Yang, and R. Dougal, *IEEE Intern Workshop on Antenna Technology and Novel MetaMaterials*, pp 225-228, White Plains, NY, Mar 2006.
10. Hardware-in-the Loop Testing of Digital Power Controllers, Z. Jiang, R. A. Dougal, R. Leonard, H. Figueroa, A. Monti, *IEEE Applied Power Electronics Conference*, pp. 901-906, Dallas, TX, March 2006.
11. A Hybrid Fuel Cell Power Supply with Rapid Dynamic Response and High Peak-Power Capacity, Z. Jiang, R. A. Dougal, *IEEE Applied Power Electronics conference*, pp. 1250-1255, Dallas, TX, March 2006.
12. Using an Electrical Attribute Database as a Maintenance Tool for Small General Aviation Aircraft Electrical Wire and Interconnect Systems (EWIS)," M. Bridgwood, E. R. Collins, S. Hubbard, Y. J. Shin, R. A. Dougal, 9th Jointing FAA/DoD/NASA Conference on Aging Aircraft, Atlanta, GA, March 2006.
13. A Nonlinear Model for Studying Synchronous Machine Dynamic Behavior in Phase Coordinates, W. Gao, S. Meliopoulos, E. Solodovnik, R. Dougal, *IEEE International Conf. on Industrial Technology*, pp 1092-1097, Hong Kong, China, December 2005.
14. Thermal Analysis of a Single Sided Axial Flux Permanent Magnet Motor, Z. Vilar, D. Patterson, R. Dougal, *IEEE Industrial Electronics Conference*, pp 2570-2574, Raleigh, NC, November 2005.

15. Modeling of Power Diode by Combining the Behavioral and the Physical Models, H. Wu, R. A. Dougal, C. Jin, IEEE Industrial Electronics Conference, pp 685-690, Raleigh, NC, November 2005.
16. Dynamic Multi-resolution Modeling of Power Super Capacitor, H. Wu, R.A. Dougal, North American Power Symposium, pp 241-246, Ames, IA, Oct 2005.
17. Deploying Modelica Models into Multiple Simulation Environments, Y. Chernukhin, M. Polenov, C Vemulapally, E Solodovnik, H. A. Mantooth, R. Dougal, IEEE International Behavioral Modeling and Simulation Workshop, pp. 134-139, San Jose, CA, September 2005.
18. Design Tools for Electric Ship Systems, R. A. Dougal, IEEE Electric Ship Technologies Symposium, pp. 8-11, Philadelphia, PA, July 2005.
19. Interface Issues in Hardware-in-the-loop Simulation, A. Monti, H. Figueroa, S. Lentijo, X. Wu, R. Dougal, IEEE Electric Ship Technologies Symposium, pp. 39-45, Philadelphia, PA, July 2005.
20. Ship Power System Control: A Technology Assessment, A. Monti, D. Boroyevich, D. Cartes, R. Dougal, H. Ginn, G. Monnat, S. Pekarek, F. Ponci, E. Santi, S. Sudhoff, N. Schulz, W. Shutt, and F. Wang, pp. 292-297, IEEE Electric Ship Technologies Symposium, Philadelphia, PA, July 2005.
21. Effectiveness of Generator Control Strategies on Meeting Pulsed Load Requirements in Ship Electric Systems, Z. W. Vilar and R. A. Dougal, IEEE Electric Ship Technologies Symposium, pp. 459-462, Philadelphia, PA, July 2005.
22. A Multi-Functional Stacked Patch Antenna for Wireless Power Beaming and Data Telemetry, Yang G., M. Ali, R. Dougal, IEEE Antennas and Propagation Symposium, Vol 2a, pp. 359-362, Washington, DC, July 2005.
23. Symbolic Modeling of Non-linear Devices for the Virtual Test Bed, R. Dougal, E. Solodovnik, IEEE Power Engineering Society General Meeting CD, San Francisco, CA, June 2005.
24. Modeling of Uncertainty and Applications in Monitoring and Control of Power Electronics,” A. Monti, F. Ponci, T. Lovett, A. Smith, R. Dougal, American Control Conference (ACC), Portland, OR, June 2005.
25. Evaluation of Non-failure Operation Time of Power System Elements in Virtual Test Bed Environment via Time-Frequency Analysis, Y. Shin, R. Dougal, G. Balim, V. Lyashev, V. Popov, IEEE Instrumentation and Measurement Technology Conference, pp. 373-741, Ottawa, Canada, May 2005.
26. A Wideband Circularly Polarized Rectenna for Wireless Power Transmission to Embedded Sensors, M. Ali, G. Yang, R. Dougal, IEEE Wireless and Microwave Technology, pp 83-86, Clearwater, FL, April 2005.
27. Wavelet Neural Network Based Battery State-of-Charge Estimation for Portable Electronics Applications, L. Gao, Y. Song, R. A. Dougal, IEEE Applied Power Electronics Conference, pp. 998-1002, Austin, TX, March 2005.
28. A Novel Brushless DC Motor Speed Estimator Based on Space-Frequency Localized Wavelet Neural Networks (WNNs), Y. Song, F. Ponci, A. Monti, L. Gao, R. A. Dougal, IEEE Applied Power Electronics Conference, pp.927-932, Austin, TX, March 2005.
29. A Novel Digital Power Controller for Fuel Cell/Battery Hybrid Power Sources, Z. Jiang, R. A. Dougal, R. Leonard, IEEE Applied Power Electronics Conference, pp.467-473, Austin, TX, March 2005.
30. A Novel, Digitally-controlled, Portable Photovoltaic Source, Z. Jiang, R. A. Dougal, IEEE Applied Power Electronics Conference, pp. 1797-1802, Austin, TX, March 2005.
31. Design and Testing of a Modular Permanent Magnets Brushless Linear Drive, K. Patel, S. D’Arco, A. Monti, D. Patterson, R. A. Dougal, IEEE Applied Power Electronics Conference, pp.1883-1888, Austin, TX, March 2005.
32. Simulation Environment for Performance Assessment of Reconfiguration Controls in Zonal Systems, E. Solodovnik, R. Dougal, A. Monti, ASNE Reconfiguration and Survivability Symposium, Atlantic Beach, FL, February 2005.
33. Power Anomaly Effects and Costs in Low-Voltage Mobile Power Systems, C. Singer, S. Liu, R. Dougal, ASNE Reconfiguration and Survivability Symposium, Atlantic Beach, FL, February 2005.
34. Joint Time-Frequency Domain Reflectometry for Diagnostics of Coaxial Cables, Shin, Yong June, Yong-June Shin, R. Dougal, E. J. Powers, 8th Joint NASA/FAA/DoD Conference on Aging Aircraft, Palm Springs, CA, January 2005.

35. Modeling and Simulation of a Ship's Power Distribution System, E. Solodovnik, R. Dougal, Z. Wu, Advanced Naval Propulsion Symposium CD, Herndon, VA, November 2004.
36. Design and Analysis of a Current-Mode Controlled Battery/Ultracapacitor Hybrid, S. Liu, R. A. Dougal, IEEE Industry Applications Society Annual Meeting, pp. 1140-1145, Seattle, WA, October 2004.
37. Multiobjective MPPT/Charging Controller for Standalone PV Power System under Different Insolation and Load Conditions, Z. Jiang, R. A. Dougal, IEEE Industry Applications Society Annual Meeting, pp. 1154-1160, Seattle, WA, October 2004.
38. The Virtual Test Bed Concept for Virtual Prototyping of Complex Systems, R. A. Dougal and A. Monti, Advanced Engineering Design Conference, Glasgow, UK, September 2004.
39. Rapid Prototyping of Digital Control Systems: The Virtual Test Bed Approach, A. Monti, R. A. Dougal, H. Figueroa, S. Lentijo, X. Wu, Advanced Engineering Design Conference, Glasgow, UK, September 2004.
40. A Multi-Functional Stacked Patch Antenna for Wireless Power Beaming and Data Telemetry, G. Yang, M. Ali, R. A. Dougal, IASTED International Conference on Antennas, Radar, and Wave Propagation, pp. 13-18, Banff, Canada, July 2004.
41. Processor-in-the-Loop Simulation, Real-Time Hardware-in-the-Loop Testing, and Hardware Validation of a Digitally-Controlled, Fuel-Cell Powered Battery-Charging Station, Z. Jiang, R. Leonard, R. A. Dougal, H. Figueroa, A. Monti, IEEE Power Electronics Specialists Conference, pp. 2251-2257, Aachen, Germany, June 2004.
42. Multi-Objective Control of Power Converter in Active Hybrid Fuel Cell/Battery Power Sources, Z. Jiang, L. Gao, R. A. Dougal, IEEE Power Electronics Specialists Conference, pp. 3804-3811, Aachen, Germany, June 2004.
43. Synergetic Control of DC-DC Buck Converters with Constant Power Load, I. Kondratiev, R. Dougal, E. Santi, G. Veselov, IEEE Power Electronics Specialists Conference, pp. 3758-3764, Aachen, Germany, June 2004.
44. Synergetic Control for m Parallel-Connected DC-DC Buck Converters, I. Kondratiev, R. Dougal, E. Santi, G. Veslov, IEEE Power Electronics Specialists Conference, pp. 3758-3764, Aachen, Germany, June 2004.
45. Multi-objective Control of Power Converter in an Active Hybrid Fuel Cell/Battery Power Source, Z. Jiang, L. Gao, and R. Dougal, IEEE Power Electronics Specialists Conference, pp. 3804-3811, Aachen, Germany, June 2004.
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1. “A Cross-disciplinary Environment for Simulation-based Design” featured speaker for combined meeting of the Society of Naval Architects and Marine Engineers and the International Council on System Engineering, Newport News, VA, Feb. 16, 2006.
2. “Ship Smart System Design – A simulation based design environment for ship systems”. Presented at the Center for Innovation in Ship Design, Naval Sea Systems Command, Washington Shipyard, and at Naval Surface Warfare Center/ Carderock, July 8, 2004
3. “VTB in Control Applications”, Naval Surface Warfare Center, Philadelphia, Dec 6, 2004.
4. “Virtual Prototyping of Power Sources and Systems”, ABB NA, June 30, 2003
5. “A Virtual Test Bed for Advanced Electric Systems”, Western European Armaments Group Workshop on Modeling and Simulation, Amsterdam, NL, Sept 27, 2001
6. “Virtual Test Bed: Virtual prototyping of electric ship systems”, Forum on Modeling and Simulation, Centre Technique des Systemes Navals, Toulon, FR, May 20, 2002.
7. “Accelerating Interdisciplinary Research”, The Razor Lecture, IEEE Charleston Section, The Citadel, Mar 19, 2002
8. “A virtual prototyping environment for integration of advanced power sources and systems”, Integrated Systems Simulation, Cambridge, UK, Dec 12, 2002
9. “A virtual prototyping environment for integration of advanced power sources and systems”, SAE Power Systems Conference, Oct 30, 2002
10. “Virtual Test Bed”, ASME Columbia Section meeting, Sept 10, 2002
11. “Publishing as a Guide to Research”, USC Chapter of ASEE, Mar 4, 2002.
12. “Virtual Test Bed for Advanced Battery Systems”, Workshop on Engineering Models of Advanced Batteries, Arlington, VA, August 14, 2001

GRANT AND CONTRACT RESEARCH

PI for all except where other name is listed as PI.

Project Title	PI	Co-PI	Sponsor	Funding	Dates	
					Start	End
Personal Power Network			Office of Naval Res	\$775,482	2006-07-01	2009-12-31
Fuel Cell Power Interface to Aircraft Power System			USC IUCRC for Fuel Cells	\$31,500	2006-07-01	2007-09-15
Migration of Physics-based "Real Power" Models into the Halle Environment for War Gaming and Mission Planning			US Army RDECOM	\$25,000	2006-09-20	2007-05-20
USC Participation in Electric Ship R&D Consortium		Monti, Santi, Ponci, Liu, Ali, Shin	FSU / ONR	\$10,816,295	2002-06-01	2007-06-30
Bidirectional Power Converter for Hybrid Fuel Cell Power Sources		Santi	Materials and Electrochemical Research Corp	\$221,275	2005-05-02	2007-05-02
Soldier System Power Sources			ONR	\$470,719	2003-07-31	2006-09-15
Incorporation of Physics-based Power and Energy Models into War Gaming and Mission Planning Environments			US Army RDECOM	\$39,987	2005-10-01	2006-05-31

Project Title	PI	Co-PI	Sponsor	Funding	Dates	
					Start	End
Distributed Simulation and Visualization of 2-D Ship Maneuvering			Northrop Grumman Newport News	\$27,973	2005-08-11	2005-12-10
Coupled Solvers for Multirate Integration in VTB			CSU-Chico/ONR	\$24,758	2005-04-01	2007-05-31
Ship Smart Systems Design Phase I		A. Monti	Office of Naval Research/FSU	\$782,163	2004-04-01	2005-03-01
Virtual Prototype of Ship Electric System for Testing of Reconfiguration Controls		E. Solodovnik	Barron Associates Inc./ONR	\$21,492	2004-07-26	2005-02-01
Optimally Configured Hybrid Fuel Cell/Battery Power Source		L. Gao	Renew Power/Tekion Solutions	\$14,262	2004-09-20	2004-10-31
Effect of Electric Power Disturbances on Equipment Reliability and Maintenance Costs		S. Liu	Eagle Systems, Inc./US Naval Air Systems	\$42,746	2004-04-01	2004-09-30
Frequency-Agile Wide-Bandwidth Power Interface to Support Incremental Virtual Prototyping	A. Monti	Dougal	ONR	\$198,553	2003-07-01	2004-07-01
Virtual Prototyping, Advanced Electric Systems, and Controls for Ships		A. Monti	ONR	\$938,000	2003-06-15	2004-03-31
Hybrid Advanced Power Sources III	R. White	Dougal	US Army CECOM	\$1,148,000	2003-04-22	2004-07-21
Life Modeling of Li-Ion Cells	R. White	Dougal	National Reconnaissance Office	\$590,000	2003-04-01	2004-09-30
Ship Smart System Design: Feasibility Study		A. Monti	Northrop Grumman Ship Systems	\$50,000	2003-06-01	2003-08-01
Hybrid Advanced Power Sources II	R. White	R. Dougal, J. Weidner, B. Popov, J. Ritter	National Reconnaissance Office/US Army CECOM	\$1,080,000	2001-08-16	2003-01-31
Modeling of Power Systems for Marines	R. White	R. Dougal	ONR	\$450,000	2000-04-01	2003-06-30
Virtual Test Bed for Advanced Electrical Systems		C. W. Brice, J. Hudgins, A. Monti, E. Santi	ONR	\$9,524,025	1999-12-01	2002-11-30
Hybrid Advanced Power Sources	R. White	R. Dougal, J. Weidner, B. Popov, J. Ritter	National Reconnaissance Office/US Army CECOM	\$1,150,000	2000-07-01	2002-07-31
Integrated Power System Study, Modeling from First Principles	R. White	R. Dougal	MRJ Veridian	\$135,000	2000-07-03	2001-09-30
Modeling of On-Board Fuel Cell-Based Power Systems for Naval Ships	R. White	R. Dougal	ONR/DOD/EPSCoR	\$418,326	1999-04-15	2002-04-14
Virtual Test Bed		C Brice, J Hudgins, G.Cokkinides, R. Pettus, B. Beker	ONR	\$8,068,000	1996-05-01	1999-05-31
Hybrid Electro-Mechanical Circuit Breaker			Naval Surface Warfare Center	\$136,835	1997-10-01	1999-03-31
Electroset Desktop Manufacturing			Naval Air Warfare Center/Patuxent River	\$24,501	1996-05-01	1996-10-31

Project Title	PI	Co-PI	Sponsor	Funding	Dates	
					Start	End
Polymer Current Limiter			Naval Surface Warfare Center/Annapolis	\$24,824	1996-05-01	1996-10-31
Electrosetting Polymers			Naval Surface Warfare Center	\$22,000	1995-07-01	1995-10-31
Polymer Current Limiter Evaluation			Naval Surface Warfare Center	\$23,000	1995-06-01	1995-09-30
Polymer Current Limiter			Naval Surface Warfare Center	\$74,000	1994-09-01	1995-05-31
Photoconductive Switching		J Hudgins	ODU/ONR	\$14,000	1994-04-01	1995-04-30
Test of electron beam technology on Savannah River Laboratory low-activity aqueous waste for destruction of benzene, benzene derivatives, and bacteria			Westinghouse Savannah River Co.	\$325,980	1992-03-01	1993-03-31
Photoconductive Switching		D Bailey J Hudgins	ONR	\$50,000	1993-01-01	1993-12-31
Recovery After Interconductor Discharge in Space power systems			Center for Commercial Development of Space Power/Auburn	\$206,000	1988-05-01	1991-09-30
Beam Detection, Discrimination, and Control			IFR, Inc.	\$25,000	1989-11-01	1990-02-28
Engineering Research Equipment Grant: Fast Multichannel Digital Data Acquisition System		T Sudarshan J Hudgins	NSF	\$63,000	1987-09-15	1989-02-28
Development of Electrical Engineering High Voltage Laboratory Facility		R. Bonnell L. Lown	U.S. Dept of Education	\$275,000 w/matching \$225,000	1986-10-01	1988-12-31
Magnetically delayed vacuum switching			Lawrence Livermore National Lab	\$19,000	1987-06-01	1987-10-31
Energy losses in magnetic switching cores			Sandia National Lab	\$25,000	1986-03-01	1987-12-31
Vacuum Gap Recovery			Los Alamos National Lab	\$10,000	1986-09-01	11/31/1986
Investigations of Interfacial Phenomena in Compressed Nitrogen Gas	Sudarshan	Dougal	Oak Ridge National Lab	\$49,000	1985-01-01	1985-12-31
Development of a Laser System			R/PS GRANTS	\$3,145	1985-01-01	1985-12-31
New Insulators for High Voltage TWT Feedthroughs	Sudarshan	Dougal	INTELSAT	\$120,000	1985-10-01-	1987-10-31
Basic Investigations of Electronic Processes in the Breakdown of Compressed Gas - Solid Dielectric interfaces	Sudarshan	Dougal	Oak Ridge National Lab	\$102,925	1984-12-01	1985-12-31
Mechanisms for Recovery of Electrical Insulation Strength in Interconductor Vacuum Gaps			NSF	\$50,000 +\$50,000 matching	1984-01-01	1985-01-31

RESEARCH SUPERVISION

Doctoral Programs (as major advisor)

In Progress

Name	Topic	Start
Neely, William	Personal Power Network	2004 Aug
Young, Kathleen	Fuel cell power interface to variable frequency aircraft ac power system	2004 Aug
Leonard, Rodrigo	Distributed Solver Engine for VTB	2003 May

Jin, Chunlian	Control-based Power Circuit Protection Schemes	2003 Aug
Vilar, Eric	Modeling of Direct Methanol Fuel Cell Power Sources	2002 May
Wu, Haigang	Multiresolutional Modeling	2002 Jan

Completed

Name	Topic	Date
Vilar, Zimin Wu	Effect of Large Load Disturbances on a Limited-size AC Power System including a High Speed Turbo-generator	2007 Jan
Kondratiev, Igor	A Synergetic Control for Parallel-connected DC-DC Buck Converters	2005 May
Blackwelder, Mark	System-Level Model of a Polymer Electrolyte Membrane Fuel Cell Stack	2005 May
Jiang, Zhenhua	A Fuel Cell Powered Battery-Charging Station	2003 Augt
Gao, Lijun	Design and Optimization of Fuel Cell/Battery Supercapacitor Hybrid Power Sources for Electric Vehicles	2003 Aug
McKinney, Mark	Polymer Current Limiters for Low Voltage Power Distribution Systems	1999 Dec
Liu, Shengyi	Conformal Plasma Cathode for Surface Hardening of Steels	1995 Aug
Morris, Gibson	Conduction Processes in the Magnetically Delayed Vacuum Switch	1991 Aug
Rhinehart, Howard	Computer Simulation of Magnetic Switching Circuits and Magnetic Energy Losses	1989 May
Warren, Thomas	Pulsed Breakdown Characteristics of Vacuum Gaps (committee member - but resident advisor after J. Thompson left)	1985

Doctoral Programs as member of Advisory Committee (No data prior to 2004)**In Progress**

Name	Advisor	Dept	Dissertation Title	Start
Crapse, Philip	Shin	EE		in progress
Park, Sehkyu	Popov	Chem Engr		in progress
Wang, Guanglei	Monti	EE		in progress
Smith, Anton	Monti	EE		in progress
Dong, Qingbo	White	Chem Engr		in progress
Chandresekaran, Rajeswari	Popov	Chem Engr		in progress
Kumaresan, Karthikeyan	White	Chem Engr		in progress

Completed

Name	Advisor	Dept	Dissertation Title	Start
Deshmukh, Aalhad	Ponci	EE	Agent-based monitoring and control system for dynamic reallocation of loads in a limited power supply scenario for complex power systems	2006-12
Jiang, Wei	Khan, J	Mech Engr	Model development and system simulation of solid oxide fuel cell gas turbine hybrid cycle	2006-08
Patel, Kinjal	Monti	EE	Sensorless Control of Permanent Magnet Motors	2006-05
Lentijo, Santiago	Monti	EE	Processor-in-the-Loop Procedures for Virtual Prototyping	2005-12
Yang, Guangli	Ali	EE	Conformal Multi-functional Antennas and Rectifying Circuits for Wirelss Communication and Microwave Power Beaming	2005-12
Sikha, Godfrey	Popov	Chem Engr	Performance Analysis of Lithium-ion Battery/electrochemical Capacitor Hybrid	2005-12

Name	Advisor	Dept	Dissertation Title	Start
			Systems	
Bastos, Jimena	Monti	EE	Nonlinear Control Design via Symbolic Computation: Applying Synergetics to the Control of Power Electronics Systems	2005-08
Zhou, Saiying	Rizos	Civ Engr	An Advanced Boundary Element Method for Ship/Water Dynamic Interaction Analysis	2005-08
Li, Donghong	Santi	EE	Application of Synergetic Control to Switching Converter: Synthesis, Stability analysis and Implementation	2005-08
Song, Yujie	Ponci	EE	Wavelet Neural Networks in Nonlinear system Modeling and Motor Drives	2005-08
Ning, Gang	Popov	Chem Engr	Cycle Life Performance of Rechargeable Lithium Ion Batteries and Mathematical Modeling	2005-06
Wu, Xin	Monti	EE	Methods for Partitioning the System and Performance Evaluation in Power Hardware in the Loop Simulations	2005-05
Figueras, Hernan	Monti	EE	Novel Interface based on the Firing Signal Averaging Method for Accurate Hardware-in-the-Loop Testing of Digital Controllers for Power Electronics Applications	2005-05
Yumiceva, Francisco	Purohit	Physics	Search for CP Violation in Charged D meson Decays	2005-02
Lovett, Teems	Monti	EE	A Polynomial Chaos Approach to Network Simulation under Uncertainty	2004-12
Kim, Sunhoe	VanZee	Chem Engr	Studies of Transient Behavior of Proton Exchange Membrane Fuel Cells (PEMFC)	2004-10
Ramasamy, Ramaraja	Popov	Chem Engr	Materials Characterization and Aging Studies of Lithium Ion Battery Systems	2004-10
Brader, John	Rocheleau	Mech Engr	Design, Control, Characterization, and Simulation of Piezoelectric Piloted Hydraulic Actuators	2004-10

Master of Science Programs (as major advisor)

In Progress

Name	Topic	Date
Kumaraswamy, Ananda		2007 Fall
Sellers, John		2006 Sp
Cavaroc, Peyton		2005 Fall

Completed

Name	Topic	Date
Kondra, Pradeep	Performance of a Zinc-air/lithium-ion Hybrid Battery System	2004 Dec
Harkare, Sriram	Automated Battery Test System	2004 Dec
Broughton, C. Ernest	Scripting the VTB Multidisciplinary Simulation Environment	2002 Dec
Regal, Robert	Three-phase Impedance Measuring Device for the Virtual Test Bed	2001 Aug
Pendyala, Ravindra	Hybrid Circuit Breaker	2000 May
Benlyazid, Khalid	Hybrid Electric Vehicle: A Simulation Study	1999 Dec

Name	Topic	Date
Hucks, Jason	Schedulable Audio and Video Capture using Directshow	1999 Dec
Madabhushi, Chitra	A VCL to C++ code generator for VTB	1999 May
Lewis, Adam	Electro-setting Polymer Resins (changed to ME)	1996 Dec
Snodgrass, David	Laser-based Particle Deflection System for Spacecraft in Low Earth Orbit	1995 Aug
Mitra, Bhaskar	Anode Plasma in the Magnetically Delayed Vacuum Switch	1993 Dec
Moore, Jr. Edward	Neutral Metallic Vapor in the Interelectrode Region of the Magnetically Delayed Vacuum Switch during Single Pulse and Multi-kilohertz Operation	1993 May
Volakakis, George	Magnetically Delayed Vacuum Switching	1989 Aug
Belkhat, Mohammed	Study of Recovery in Vacuum Gaps by Laser Induced Fluorescence Imaging Techniques	1989 May
Abdalla, Michael	LIF Imaging of Post-arc Metal Vapor in a Triggered Vacuum Gap	1988 May
Skipper, Michael	Secondary Electron yield from Ceramic Insulators as a Function of Primary Electron Energy and Angle of Incidence	1988 May
Costello, John	Design and Fabrication of a Laser System for Laser Induced Fluorescence during the Post-arc Period in a Triggered Vacuum Gap	1986 Aug
Kraft, Bob	Insulator Flashover in Compressed Gases	1986 May
Cahill, James	Insulating Materials for a High Voltage Vacuum Tube Feedthrough, (co-advisor w/T. Sudarshan).	1985 Dece
McDonald, Charles	Recovery of High Current Vacuum Gaps	1984

Undergraduate Researcher Programs (as major advisor)

Name	Topic	Date
Rajos, Piero	VTB Development	2006 Sum
Cuttino, Jeffrey	Portable power sources	2006 - 2007
Henry, Tyler	VTB Development	2006 Sum
Fogle, Adam	SPRI program – Integrated Solar/Thermal Power System 2006 – ICF Wall Aspects	2006 Sum
Harville, Cedric	SPRI program – Integrated Solar/Thermal Power System 2006 – PV Aspects	2006 Sum
Iotova, Albena	Solar Collector Optimized for Dynamic Lighting, Sigma Xi award winner - Outstanding Poster Presentation in Math, Computer Science, Engineering, Geology and Physics at Sigma Xi Student Research Symposium and Eastern Colleges Science Conference, Philadelphia, PA, Apr. 2004	2004 Sum
Bell, Matt	Dynamic System Simulation - Outstanding EE student 2006	2003 - 2006
Bell, Jon	Distributed Simulation and Visualization - Outstanding EE student 2006	2003 - 2006
Hess, Tim	SPRI program - Solar Power Tracking	2005 Sum
Zhang, Chuan	SPRI/GSSM - Fuel Cell Powered Robot - Award winner (details?)	2004 Sum
Gibson, Marco	SPRI program - Solar Power System	2003 Sum
James, Adam	Power Electronics Laboratory	2003 Sum
Johnson, Jennifer	Soldier System Power Sources	2003
Neely, William	Soldier System Power Sources	2003

Name	Topic	Date
Young, Kathleen	SC Honors College Thesis, "Engineering at Work: A Senior Design Project"	2003
Liu, Xia	SPRI program - Thermal Modeling of Fuel Cell Stack	2002 Sum
Morgan, Tommy	SPRI program - Fuel Cell Stack Mass Model	2002 Sum
Gibbs, Anthony	SCAMP program - VTB Graphics Environment	2002 Sum
Bridges, Charlitrice	SCAMP program - Graphics Environment - won presentation contest	2002 Sum
Young, Kathleen	VTB Visualization - including paper for IEEE SE Con paper contest	2002
Southard, James	Vector Icon Editor for VTB	2002
Morris, Nicole	VTB Software	2002
McNiece, David	Visualization and Solid Modeling	2002
Davis, Patricia	Modeling of Fuel Cell Hybrid Power Sources including a presentation at the Sigma Xi SE conference	2002
Basher, Sharmin	SC Honors College Thesis, "Pong Robot"	2002
Torres, Matthew	SC Honors College Thesis, "IEE SE Con Robot"	2001
Bristow, Patrick	GSSM program - Battery Aging	2001 Sum
Vilar, Eric	Hybrid Power Systems	2001
Rieber, Kirk	Satellite Power Systems	2001
Illari, Roger	Fuel Cell and Hybrid Systems	2001
Sheridan, Louis	Hybrid Electric Vehicle Simulation	2001
Southard, James	VTB Schematic Editor and VTB Icon Editor	2001
Young, Kathleen	VTB Visualization	2001
Williams, Shereka	SCAMP program summer research	2001
Bridges, Charlitrice	SCAMP program summer research	2001
Bess, Dylan	SCAMP program - Characterization, Modeling, Simulation of Current Limiting Circuit Breaker	2000
Graham, M. Ryan	SC Honors College Thesis "The Role of Project Management in the Capstone Undergraduate Electrical Engineering Design Course"	2000 May
Poston, Jason	Improving the Student Experience in the 401 Design Laboratory	2000
Regal, Robert	SC Honors College Thesis "Control Systems"	1999
Hasty, Ryan	SC Honors College Thesis "PCL in Hybrid Circuit Breaker"	1999
Short, Charles	Modeling of Hybrid Circuit Breaker	1999
Bennis, Abdel	Modeling of Power Converter Components	1999
Southard, James	VTB Undergraduate Research Program	1998 Sum
Poston, Jason	VTB Undergraduate Research Program	1998 Sum
Ayres, Shawn	VTB Undergraduate Research Program	1998 Sum
Fallier, William	VTB Undergraduate Research Program –	1998 Sum
Mitra, Randip	VTB Undergraduate Research Program	1998 Sum
McPherson, Sheila	VTB Undergraduate Research Program	1998 Sum
Bierman, Robert	Electro-setting Resins	1998
Regal, Robert	Electro-setting Resins	1998
Short, Charles	Modeling/Simulation of Hybrid Circuit Breaker	1998
Hasty, Ryan	Mechanical Design of Hybrid Circuit Breaker	1998
Blackwelder, Mark	Modeling/Simulation of APT Power Supply	1998
Benlyazid, Khalid	Modeling/Simulation of Electric Vehicle	1998

Master of Engineering Programs (as advisor)

Name	Date
Kumaraswamy, Karthik	2003 Dec
Bennis, Abdel	2002 Augt
Luo, Yuwei	2001 May
Arpa, Aydin	2000 May
Weaver, James	2000 May
Pendyala, Ravindra	2000 Aug
Hardwick, Sean	2000 Aug
Webb, Robert	1999 Aug
Hua, Lei	1999 Aug
Clark, Terry	1998 Decr
Taylor, James	1998 Decr
Lewis, Robert	1998 Aug
Turner, Kenneth	1997 Aug
Lewis, Adam	1996 Decr
Yan, Xiang	1992 Aug
Caldart, Deborah	1991 May
Shirley, James	1991 May

Post-doctoral Students supervised

1. Igor Kondratiev – 2005 - present
2. Lijun Gao – 2003- present
3. Zimin Wu Vilar – 2007
4. Zhenhua Jiang – 2003 – 2005
5. Eugene Solodovnik 2000-2002

Research Faculty Supervised

1. Shengyi Liu, Associate Research Professor 1999-2006
2. Dean Patterson, Research Professor, 2003-2004
3. Eugene Solodovnik, Assistant Research Professor, 2002-2005
4. Wenzhong Gao, Assistant Research Professor, 2002

SERVICE ACTIVITIES

University Service Activities

	Dates	
	Start	End
EE Department		
Chair, 2020 Vision Committee	2006	2007
Faculty Search Committee	1999	2007
Co-chair, FIRST Robotics Palmetto Regional Planning Committee	2003	2007
Coordinator, ABET Accreditation Report	2005	2006
Associate Chair	2001	2006
Chair, Laboratory Oversight Committee	2001	2006
Robotics Short Course for Carolina Master Scholars program	2005	2006

	Dates	
	Start	End
Robotics Interim course for SC Governor's School for Science and Math	2005	2005
Co-chair Undergraduate Curriculum Committee	2004	2005
Faculty Advisor, ETA Kappa Nu	2000	2003
Advisor, IEEE SC Conference Hardware Design Competition	2002	2002
Coordinator/Author ABET Interim Review Report	2001	2001
EE Chair Search Committee	2001	2001
ECE ABET Committee	1999	1999
Chair, ECE Space Allocation/Resource Committee	1998	1998
Chair, ECE Faculty Search Committee	1998	1998
ECE Planning Committee	1998	1998
ECE Faculty Teaching Load Policy Committee	1997	1998
Chair Search Committee	1994	1994
Chair, Quantum and Physis Electronics Group Graduate Course Re-organization	1990	1990
ECE Chairman's Advisory Committee	1989	1990
Graduate Director	1986	1990
Faculty Advisor, ETA Kappa Nu	1983	1987
Academic Standards and Petitions Committee	1984	1988
Chair Search Committee	1988	1989
ECE Computer Committee	1987	1987
Chairman, Senior Design Lab Implementation Study Committee	1987	1987
College of Engineering		
ENGR Machine Shop Planning Committee	1988	1989
Dean's Faculty Advisory Committee	1999	1999
Dean's Research Advisory Committee	1998	1999
Dean Search Committee	2005	2006

Professional Service Activities

Member, Board of Directors, Electric Ship R&D Consortium, 2001 - present

Reviewer for many journals and conferences, including

- Journal of Aerospace Science and Technology
- IEEE Trans on Plasma Science
- Review of Scientific Instruments
- IEEE Trans on Power Electronics
- Journal of Power Sources

Reviewer for funding agencies

- NSF SBIR review panels
- NSF individual proposals

Conference Organizer as General Chair

1. Electric Ship R&D Consortium May PI meeting, Columbia, May 31-June 1, 2006
2. Simulation-based Design of Electric Warships, Tallahassee, Feb 14-15, 2006
3. VTB Annual Review 1997, 1998, 1999, 2000, 2001, 2002
4. VTB Users and Developers Conference 2003, 2004, 2005, 2006

5. From Basics to the Battlefield: US Army Fuel Cell Power Source Conference, Feb 2003.
6. Workshop on Ship System Simulation using VTB, Oct 20-23, 2003
7. Power Electronics Building Block Program Review, Charleston, 1999
8. External Expert for Senior Thesis of Carroll Heyward at Heathwood Hall – Fuel cell power sources

Workshops and Short Courses attended (since 2003)

1. Integrated Structural Building Block, Univ New Orleans, 2005
2. Workshop on Multifunctional Structures, Stanford, Dec 2004
3. Universal Controller Planning Meeting, NSWC/Phil, Dec 2004
4. System-based Fuel Cell Design and Manufacturing, U Conn, Aug 2004
5. Managing Technical Professionals, MIT Sloan School, Nov 2003

Workshops and Short Courses Led (since 2003)

1. Workshop on the Virtual Test Bed, Univ. of Glasgow, Scotland, UK, Sept 3, 2004
2. VTB User Training workshop for industry, government, and academia, USC, Sept 2004
3. Teacher workshop for FIRST Robotics Sept 2004
4. VTB Users Workshops (many) Dec 2000 - current

COURSES TAUGHT

1. ELCT 897 Electro-polymers
2. ELCT 891F Electrochemical power sources
3. ELCT 891C Simulation Methods
4. ELCT 891B Advances in Modeling and Simulation
5. EECE 891 Pulsed Power Switching
6. EECE 878 High Power Generation and Diagnostics
7. EECE 876 Electrical Insulation and Conduction in Vacuum
8. EECE 873 Laser Principles and Applications
9. EECE 781 Pulsed Power Systems
10. EECE 870 Computational Simulation of Physical systems
11. EECE 891G Special Topics in High Power Switching
12. EECE 776 Lasers
13. EECE 775 Plasma Electronics
14. EECE 766 Electro Optics
15. EECE 572 Power Electronics
16. ELCT 566 Optoelectronics
17. EECE 563 Physical Electronics
18. EECE 562 Engineering Optics
19. EECE 561 Electro-optics
20. ELCT 402 Capstone Design Project
21. EECE 401 Senior Design Lab
22. ELCT 371 Electronics
23. ELCT 361 Electromagnetic Fields
24. EECE 363 Electrical Materials
25. EECE 302 Electronics Laboratory
26. EECE 221 Circuits I

- 27. EECE 222 Circuits II
- 28. EECE 201 Instrumentation and Measurement Laboratory
- 29. UNIV 101E The Student in Engineering