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The University of Tennessee
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Education

PhD. in electrical engineering, Georgia Institute of Technology, Atlanta, Georgia, June 1999

Dissertation: “Multilevel Carrier-Based Pulse Width Modulation Techniques
Applied to a Diode-Clamped Converter for Use as a Universal Power Conditioner”
Advisor: Tom Habetler

M.S. in electrical engineering, Georgia Institute of Technology, Atlanta, Georgia, March 1991

Bachelor's of Electrical Engineering with highest honors, Georgia Institute of Technology, Atlanta,
Georgia, December 1989

Employment

The University of Tennessee, Knoxville, Tennessee

August 2010 – present, *Professor*

August 2005 – July 2010, *Associate Professor (Associate Department Head, 2007 – 2010)*

August 1999 – July 2005, *Assistant Professor*

Oak Ridge National Laboratory, Oak Ridge, Tennessee

September 1999 – present, *Senior Research and Design Engineer (part time)*, National
Transportation Research Center

May 1997 – August 1999, *Research and Design Engineer*, Power Electronics and Electric
Machinery Research Center

June 1991 – April 1997, *Electrical Engineer*, Engineering Design Services

Ebasco Services Inc., Norcross, Georgia

June 1990 – September 1990, *Assistant Engineer*,

Georgia Institute of Technology, Atlanta, Georgia

January 1990 – June 1991, *Graduate Research Assistant*, School of Electrical Engineering

International Business Machines (IBM), Lexington, Kentucky

June 1989 – September 1989, *Pre-Professional Engineer*, Printers Division

National and International Honors and Awards

- Prize paper award from *IEEE Transactions on Power Electronics*, 2009
- First prize paper award from the Industrial Power Converter Committee of the IEEE Industry Applications Society, 2007
- IEEE Industry Applications Society Outstanding Young Member Award, 2001
- National Science Foundation CAREER Award, 2001
- Second prize paper award from the Industrial Drives Committee of the IEEE Industry Applications Society, 1991

University and ORNL Honors and Awards

- Moses A. and Mayme Brooks Distinguished Professor Award, College of Engineering, The University of Tennessee, 2010
- Named Min H. Kao Professor, Department of Electrical Engineering and Computer Science, The University of Tennessee, 2008
- Research Fellow Award, College of Engineering, The University of Tennessee, 2007
- Min Kao Faculty Fellowship, Department of Electrical and Computer Engineering, The University of Tennessee, 2006
- Gonzalez Family Award for Excellence in Research, Department of Electrical and Computer Engineering, The University of Tennessee, 2004
- Research Fellow Award, College of Engineering, The University of Tennessee, 2003
- University of Tennessee Provost's Citation for Professional Promise in Research and Creative Achievement, 2003
- Significant Event Award, Oak Ridge National Laboratory, 2003
- Weston Fulton Professorship, College of Engineering, The University of Tennessee, 2001
- World Class Teamwork Award, ORNL, 2001
- Extra Mile Award, Engineering Technology Division, ORNL, 1999
- President's Award for Continuous Improvement, ORNL, 1999
- Teamwork Award, Engineering Services Division, ORNL, 1993
- Georgia Tech Graduate President's Fellowship, 1990 – 1991
- Atlanta IEEE Power Engineering Society Fellowship, 1989 – 1990
- Tau Beta Pi Engineering Honor Society
- Eta Kappa Nu Electrical Engineering Honor Society
- Georgia Tech President's Scholarship, 1986 – 1989

Professional Memberships

- Registered Professional Engineer, State of Tennessee, 1995 – present
- IEEE Senior Member, 1998 – present
IEEE Member, 1991 – 1998
IEEE Student Member, 1988 – 1991
- Member of the following IEEE societies
 - Industry Applications Society
 - Industrial Electronics Society
 - Power Electronics Society
 - Power and Energy Society

Service Activity

Professional Service

- Associate Editor, *IEEE Transactions on Power Electronics*, 2007 – present
- Elected Member At-Large, Advisory Committee, IEEE Power Electronics Society, 2010 – 2012
- Membership Committee Chair, IEEE Power Electronics Society, 2011 – 2012
- Conference Web Chair and Technical Program Committee, IEEE Energy Conversion Congress and Exposition, 2012, Raleigh, North Carolina, www.ecce2012.org
- Conference Web Chair and Technical Program Committee, IEEE Energy Conversion Congress and Exposition, 2010, Atlanta, Georgia, www.ecce2010.org
- Conference Web Chair and Technical Program Committee, IEEE Energy Conversion Congress and Exposition, 2009, San Jose, California, www.ecce2009.org
- Member, Power Conversion Systems and Components Technical Committee, IEEE Power Electronics Society, 2003 – present
- Member, Industrial Power Converter Committee, IEEE Industry Applications Society, 1998 – present
- Chair, Education Activities Committee, IEEE Power Electronics Society, 2003 – 2007
- Member, Advisory Committee, IEEE Power Electronics Society, 2003 – 2007
- Chair, Special Activities, Industrial Power Converter Committee, IEEE Industry Applications Society, 2003 – 2006
- Associate Editor, *IEEE Power Electronics Letters*, 2003 – 2006
- Chair, Student Activities Committee, IEEE Industry Applications Society, 2001 – 2003
- Associate Editor, *IEEE Transactions on Power Electronics* special issue on Distributed Generation, published vol. 19, no. 5, September 2004
- Judge, Student Poster Contest, IEEE Energy Conversion Congress and Exposition, Phoenix, Arizona, Sept. 20, 2011
- Session Chair, FACTS, European Power Electronics Conference (IEEE ECCE Europe), Aug. 30, 2011
- Session Chair, Bidirectional Converters, Multilevel Converters, IEEE Energy Conversion Congress and Exposition, Atlanta, Georgia, Sept. 14 and 16, 2010
- Session Chair, Wind Power, IEEE Power Engineering Society General Meeting, Minneapolis, Minnesota, July 28, 2010
- Session Co-Chair, Soft-Switching Converters, IEEE International Power Electronics Conference, Sapporo, Japan, June 24, 2010
- Session Chair, Reliability and Diagnostics, IEEE Energy Conversion Congress and Exposition, San Jose, California, Sept. 23, 2009
- Session Co-Chair, IEEE International Conference on Industrial Electronics and Applications, Xi'an, China, May 26, 2009
- Session Chair, IEEE Power Electronics and Motion Control Conference, Wuhan, China, May 18, 2009
- Session Chair, Energy Storage, IEEE Energy 2030, Atlanta, Georgia, Nov. 18, 2008

- Session Chair, Alternative Energy, IEEE Industry Applications Society Annual Meeting, Edmonton, Canada, October 9, 2008
- Power Electronics Track Chair, IEEE Midwest Symposium on Circuits and Systems, Knoxville, Tennessee, August 9-13, 2008
- Session Chair, Multilevel Inverter Technologies, IEEE Power Electronics Specialists Conference, Rhodes, Greece, June 19, 2008
- Invited Tutorial Presenter, SiC Semiconductor Devices and Applications, IEEE Power Electronics Specialists Conference, Rhodes, Greece, June 15, 2008
- Session Chair, Modeling and Control of Motor Drives, IEEE Applied Power Electronics Conference, Anaheim, California, February 28, 2007
- Session Organizer and Chair, Industrial Power Converter Committee Products and Services Session, IEEE Industry Applications Society Annual Meeting, Tampa, Florida, Oct. 10, 2006
- Session Chair, Machines and Drives, IEEE Workshop on Computers in Power Electronics, July 19, 2006
- Session Organizer and Chair, Industrial Power Converter Committee Products and Services Session, IEEE Industry Applications Society Annual Meeting, Hong Kong, October 6, 2005
- Session Chair, Motor Drives III, IEEE Power Electronics Specialists Conference, Recife, Brazil, June 22, 2005
- Session Chair, AC Output Converters, IEEE Applied Power Electronics Conference, Austin, Texas, March 10, 2005
- Session Organizer and Chair, Industrial Power Converter Products and Services Session, IEEE Industry Applications Society Annual Meeting, Seattle, Washington, October 4, 2004
- Session Chair, Active Filters, IEEE International Conference on Harmonics and Power Quality, Lake Placid, New York, September 13, 2004
- Session Chair, Power Quality and Utility Interface, IEEE Applied Power Electronics Conference, Anaheim, California, February 25, 2004
- Session Chair, Dynamic Compensators, IEEE Industry Applications Society Annual Meeting, Salt Lake City, Utah, October 14, 2003
- Session Chair, High Frequency Inverters, IEEE Power Electronics Specialists Conference, Acapulco, Mexico, June 19, 2003
- Session Chair, Multilevel Converters, IEEE Industry Applications Society Annual Meeting, Pittsburgh, Pennsylvania, October 14, 2002
- Session Chair, Active Filters, IEEE Industrial Electronics Conference, Denver, Colorado, December 1, 2001
- Invited Panelist, Power Electronics Forecast for the Next Decade, IEEE International Power Electronics Congress, Acapulco, Mexico, October 18, 2000
- Session Chair, High Frequency Power Conversion, IEEE Industry Applications Society Annual Meeting, Rome, Italy, October 12, 2000
- Tutorial Presenter, High Power Converters, IEEE Industry Applications Society Annual Meeting, Rome, Italy, October 8, 2000
- Invited Panelist, Power Electronics and Renewable Energy Systems, IEEE Power Engineering Society Summer Meeting, Seattle, Washington, July 18, 2000

Editorial Review

- *IEEE Transactions on Power Electronics*, 1999-2011
- *IEEE Transactions on Industry Applications*, 1996-1999, 2004–2011
- *IEEE Transactions on Industrial Electronics*, 2001, 2002, 2004, 2006–2011
- *IEEE Transactions on Power Delivery*, 2010-2011
- *IEEE Industrial Electronics Magazine*, 2009, 2011
- *IEEE Transactions on Circuits and Systems II*, 2004, 2011
- *IEEE Transactions on Vehicle Technologies*, 2011
- *IEEE Transactions on Energy Conversion*, 2004, 2005, 2008, 2009
- *IEEE Transactions on Education*, 2000, 2001, 2009
- *IET Proceedings on Power Electronics*, 2008–2011
- *Electric Power Systems Research*, 2011
- *IET Proceedings on Electric Power Applications*, 2004–2008
- *European Transactions on Electric Power*, 2009, 2010
- *Journal of Zhejiang University*, 2008–2010
- *IEEE Transactions on Dielectrics and Electrical Insulation*, 2006
- *IEEE Transactions on Circuits and Systems I*, 2006
- *Journal of Simulation Modeling Practice and Theory*, 2006
- IEEE Xpert Now, Power Electronics Tutorials, 2005, 2006
- *IEEE Transactions on Nuclear Science*, 2005, 2008
- *IEEE Transactions on Applied Superconductivity*, 2004, 2005
- *International Journal of Neural Network Science*, 2005
- *IEEE Transactions on Control System Technology*, 2002, 2003
- IEEE Applied Power Electronics Conference, 1999, 2000, 2004, 2005, 2010 – 2012
- IEEE Energy Conversion Congress and Exposition, 2009 – 2011
- IEEE Industrial Electronics Conference, 2001, 2003, 2004, 2011
- IEEE International Conference on Electrical Machines, 2010
- IEEE International Power Electronics Conference, 2010
- IEEE Conference on Industrial Electronics and Applications, 2009
- IEEE International Power Electronics and Motion Control Conference, 2009
- IEEE International Conference on Industrial Electronics and Applications, 2009
- IEEE Power Engineering General Meeting, 2003, 2004, 2009
- IEEE Industry Applications Society Annual Meeting, 1996, 2000, 2002–2004, 2006–2008
- IEEE International Electric Machines and Drives Conference, 2007
- IEEE Power Electronics Specialists Conference, 2004, 2006
- IEEE International Power Electronics Congress, 2000, 2002, 2004

University Service

- Member, EECS Assessment Committee (ABET), 2010 – present
- EECS Associate Department Head, 2007 – 2010
- EECS Graduate Program Director, 2007 – 2010
- EECS Undergraduate Liaison, 2007 – 2010
- Faculty Advisor, Eta Kappa Nu, 2005 – 2009
- Member, ECE Undergraduate Committee, 2006 – 2007
- Member, College of Engineering GTA Committee, 2007
- Member, EECS Department Head Search Committee, 2007
- Member, EECS Business Manager Search Committee, 2007, 2011
- Member, College of Engineering By-Laws Committee, 2005 – 2006
- Member, ECE Graduate Committee, 2001 – 2006
- Co-chair, ECE-CS Merger Subcommittee #3, 2006
- Member, Gonzalez Family Awards Committee, 2005, 2006
- Chair, ECE Faculty Search Committee – Power, 2004, 2005, 2009, 2012
- Member, ECE Faculty Search Committee – Electronics, 2001, 2002, 2003
- Co-chair, ECE Curriculum Committee, 2001
- Developed and maintain web page for UT Power Engineering Laboratory, <http://power.eecs.utk.edu>
- Faculty Mentor, Ronald McNair Post Baccalaureate Achievement Program, 2003
- Judge, Sigma Xi Graduate Student Presentation Competition, 2004, 2009

Public Service

- Proposal Reviewer, Chile National Fund for Scientific & Technological Development, 2010, 2011
- Proposal Reviewer, ARPA-E, 2011
- Member, International Board of Advisors, Vestas Power Program, Aalborg University (Denmark), 2008 - present
- External Examiner, Ph.D. Dissertation, Indian Institute of Technology, Madras, India, 2011
- On-site Review Panel, National Science Foundation, Raleigh, North Carolina, June 2011
- External Examiner, Ph.D. Dissertation, Lappeenranta University of Technology, Finland, 2010
- Proposal Reviewer, DOE Office of Energy Efficiency, 2009
- External Examiner, Ph.D. Dissertation, Huazhong University of Science and Technology, China, 2009
- External Examiner, Ph.D. Dissertation, Nanyang Technical University, Singapore, 2009
- External Examiner, Ph.D. Dissertation, Indian Institute of Technology, Madras, India, 2009
- Proposal Reviewer, Nebraska University, 2009
- Proposal Reviewer, Israel Research Foundation, 2008
- On-site Review Panel, National Science Foundation, Raleigh, North Carolina, March 2008
- SBIR Proposal Reviewer, U. S. Department of Energy, 2001, 2002, 2003, 2004, 2007, 2008
- External Examiner, National Research Foundation, South Africa, 2007
- External Examiner, Ph.D. Dissertation, University of Nottingham, UK, May 2007
- Review Panel, National Science Foundation, Arlington, Virginia, 2007
- Program Reviewer, US DOE Office of Electric Transmission and Distribution, Energy Storage Program, Washington, DC, November 2-3, 2006
- Proposal Reviewer, California Energy Commission, Energy Innovations Grant Program, 2004, 2005
- Proposal Reviewer, Florida State University, Cornerstone Program, 2004, 2005
- Review Panel, National Science Foundation, December 2004
- Program Reviewer, US DOE Office of Electric Transmission and Distribution, Gridworks Program, Chicago, Illinois, October 20-21, 2004
- Proposal Reviewer, National Science Foundation, International Programs, 2004
- Proposal Reviewer, Indiana Governor's Office, 21st Century Initiative, 2004
- Proposal Reviewer, South Dakota Board of Regents, Research Centers Program, 2004
- Program Reviewer, DOE/TVA Reactive Power Program, Knoxville, Tennessee, April 20, 2004
- Proposal Reviewer, Arkansas Science and Technology Authority, 2004
- Program Reviewer, Electrical Reliability Program, U. S. Department of Energy, Washington, D.C., January 23-25, 2004
- Proposal Panel Reviewer, National Science Foundation, Arlington, Virginia, 2003
- Program Review, Power Technology Research, Tennessee Valley Authority, Nashville, Tennessee, 2002, 2003
- Program Reviewer, Advanced Power Electronics and Energy Storage Research, Tennessee Valley Authority, Knoxville, Tennessee, November 14-15, 2002
- Member, Organizing Committee, Future Energy Challenge, 2000-2001
- Program Reviewer, DOE Systems Interconnection Technologies Workshop, U. S. Department of Energy, Washington, D.C., July 23-25, 2001
- Session Chair, U.S. Department of Energy, DER Systems Interconnection Technologies Workshop, Knoxville, Tennessee, May 2001

Current Graduate Students – Major Advisor

<u>Name</u>	<u>Degree Program</u>	<u>Start Date</u>	<u>Expected Completion Date</u>
Brad Trento	M.S.	August 2008	May 2012
Micah Sweeney	M.S.	August 2010	May 2012
Michael Pickelsimer	M.S.	May 2011	2012
Eric Taylor	M.S.	August 2009	2012
Mithat Kisacikoglu	Ph.D.	August 2007	May 2012
Faete Filho	Ph.D.	January 2008	May 2012
Lakshmi Gopi Reddy	Ph.D.	August 2008	2013
Bailu Xiao	Ph.D.	August 2009	2013
Fan Xu	Ph.D.	August 2009	2013
Yutian Cui	Ph.D.	May 2011	2014
Jing Wang	Ph.D.	August 2011	2014
Madhu Chinthavali	Ph.D.	August 2011	2014
Zhiqiang Wang	Ph.D.	August 2011	2015
Xiaojie Shi	Ph.D.	August 2011	2015
Liu Yang	Ph.D.	August 2011	2015
Yang Xue	Ph.D.	August 2011	2015

Previous Ph.D. Students – Major Advisor

- 1) Shengnan Li, Ph.D., December 2011
Dissertation: “Packaging Design of IGBT Power Module Using Novel Switching Cells”
- 2) Haiwen Liu, Ph.D., August 2009
Dissertation: “Design and Application of Hybrid Multilevel Inverter for Voltage Boost”
- 3) Michael Starke, Ph.D., August 2009
Dissertation: “DC Distribution with Fuel Cells as Distributed Energy Resources”
- 4) Seong Taek Lee, Ph.D., August 2009
Dissertation: “Development and Analysis of Interior Permanent Magnet Synchronous Motor with External Field Excitation Structure”
- 5) Hui Zhang, Ph.D., December 2007
Dissertation: “Electro-thermal Modeling of SiC Power Electronic Systems”
- 6) Wenjuan Zhang, Ph.D., December 2007 (Dr. Fran Li co-advisor)
Dissertation: “Optimal Sizing and Location of Static and Dynamic Reactive Power Compensation”
- 7) Faisal Khan, Ph.D., May 2007
Dissertation: “Multilevel Modular DC-DC Converters”
- 8) Surin Khomfoi, Ph.D., May 2007
Dissertation: “Fault Diagnostic System for Cascaded H-Bridge Multilevel Inverter Drives Based on Artificial Intelligent Approaches Incorporating a Reconfiguration Technique”
- 9) Zhong Du, Ph.D., May 2005
Dissertation: “Active Harmonic Elimination in Multilevel Converters”
- 10) Burak Ozpineci, Ph.D., August 2002
Dissertation: “System Impact of SiC Power Electronics on Hybrid Electric Vehicle Applications”

Previous M.S. Students – Major Advisor

- 1) Jing Wang, M.S. August 2011
Project: “Characterization, Modeling, and Behavior Analysis of SiC JFET Devices”
- 2) Yutian Cui, M.S. May 2011
Project: “Testing and Modeling of SiC Power Devices”
- 3) Brittnee Robinson, M.S. December 2009
Project: “Behavior of Full-Converter Wind Turbine Under Nearby Wind Plant Fault”
- 4) Olumide Aluko, M.S. December 2009
Project: “Behavior of Doubly-Fed Induction Generator Under Nearby Wind Plant Fault”
- 5) Seana McNeal, M.S. December 2008
Project: “Effects of Paralleling Normally-On SiC JFETs”
- 6) Shibani Mishra, M.S. December 2008
Thesis: “Fault Current Limiting and Protection Circuit for Power Electronics used in a Modular Converter”
- 7) Curtis Miller, M.S. May 2008
Thesis: “Temperature Characterization of the Ultracapacitor Series Resistance using a Constant Voltage Source”
- 8) Lakshmi Reddy Gopi Reddy, M.S. August 2007
Thesis: “Evaluation of Losses in HID Electronic Ballast Using Silicon Carbide MOSFETs”

- 9) Michael Starke, M.S. August 2006
Thesis: "Thermoelectrics for Cooling Power Electronics"
- 10) Tim Burress, M.S. August 2006
Thesis: "Vector Control and Experimental Evaluation of Permanent Magnet Synchronous Motors for HEVs"
- 11) Pierre Boheme, M.S. August 2006
Thesis: "Simulation of Power System Response to Reactive Power Compensation"
- 12) Chris Patton, M.S. August 2006
Project: "Simulation and Design of a Seven-Level, Split-Phase, Diode-Clamped Multilevel Inverter"
- 13) Gerald Callison, M.S. May 2006
Thesis: "An Evaluation of the Cascaded H-Bridge Multilevel Inverter Topology For Direct-Drive Synchronous Wind Farm Applications"
- 14) Eric Cardwell, M.S. May 2006, course-only option
- 15) M. Ben Sooter, M.S., December 2005
Thesis: "Thermal Control for an Advanced Power Conductor Test Facility"
- 16) SeongTaek Lee, M.S. August 2005
Thesis: "Finite Element Analysis of an Enhanced Flux Permanent Magnet Motor"
- 17) Pankaj Pandit, M.S., May 2005
Thesis: "Reactive Power Compensation with an Active Front End Rectifier"
- 18) Jeremy Campbell, M.S., December 2004
Thesis: "A Two-Phase Cooling Method Using R134a Refrigerant to Cool Power Electronics Devices"
- 19) Keith McKenzie, M.S., May 2004 (Dr. John Chiasson co-advisor)
Thesis: "Eliminating Harmonics in a Cascaded H-Bridges Multilevel Inverter Using Resultant Theory, Symmetric Polynomials, and Power Sums"
- 20) Jianqing Chen, M.S., August 2003
Project: "Non-Periodic Current Compensation and Energy Storage Requirement"
- 21) Madhu Chinthavali, M.S. August 2003
Thesis: "Silicon Carbide GTO Thyristor Loss Model for HVDC Application"
- 22) Tim Cunyngham, M.S., May 2001
Thesis: "Cascade Multilevel Inverters for HEV Applications with Variant DC Sources"

Graduate Student Committee Member

<u>Name</u>	<u>Degree Program</u>	<u>Graduation Date</u>	<u>Major Advisor</u>
Song Yuan	M.S. electrical engineering	December 2011	S. K. Islam
Dong Jiang	Ph.D. electrical engineering	December 2011	F. Wang
Ashraf Islam	Ph.D. electrical engineering	December 2011	S. K. Islam
Solwa Mostafa	Ph.D. electrical engineering	August 2011	S. K. Islam
Alex Melhorn	M.S. electrical engineering	August 2011	K. Tomsovic
Kevin Omoumi	M.S. electrical engineering	May 2011	B. Blalock
Brian Miller	M.S. electrical engineering	December 2010	F. Li
Chiahung Su	Ph.D. electrical engineering	August 2010	S. K. Islam
M. Aminul Huque	Ph.D. electrical engineering	May 2010	S. K. Islam
Robert Armistead	M.S. electrical engineering	May 2010	F. Li
Meng Lian	Ph.D. electrical engineering	May 2010	J. Wu
Ben McCue	M.S. electrical engineering	December 2009	B. J. Blalock
Kirk Lowe	Ph.D. mechanical engineering	December 2009	R. Arimilli
Rui Bo	Ph.D. electrical engineering	August 2009	F. Li
Niranjan Patil	Ph.D. electrical engineering	May 2009	J. S. Lawler
David Smith	Ph.D. mechanical engineering	May 2009	D.E. Irick
Touhidur Rahman	Ph.D. electrical engineering	May 2009	S. K. Islam
Saeed Ghezawi	M.S. electrical engineering	May 2009	B. Blalock
Nader A. Michou	M.S. electrical engineering	December 2009	G. D. Peterson
Sazia Afreen Eliza	Ph.D. electrical engineering	December 2008	S. K. Islam
Nura Sabir	M.S. electrical engineering	December 2008	F. Li
Zhiyu Chen	M.S. electrical engineering	December 2007	J. R. Roth
L. Jo Calvez	M.S. electrical engineering	May 2007	J. R. Roth
Hasina Huq	Ph.D. electrical engineering	August 2006	S. K. Islam
Mengwei Li	Ph.D. electrical engineering	December 2005	J. N. Chiasson
Kaiyu Wang	Ph.D. electrical engineering	December 2005	J. N. Chiasson
Manish Yadav	M. S. electrical engineering	August 2005	J. R. Roth
Md. Hasanuzzaman	Ph.D. electrical engineering	May 2005	S. K. Islam
Timothy Norton	M.S. mechanical engineering	August 2003	R. Arimilli
Baskar Vairamohan	M.S. electrical engineering	August 2002	J. N. Chiasson
Yinghui Lu	M.S. electrical engineering	August 2002	J. N. Chiasson
Joao Pinto	Ph.D. electrical engineering	August 2001	J. S. Lawler
Jovan Ilic	Ph.D. electrical engineering	May 2001	J. S. Lawler
Hui Li	Ph.D. electrical engineering	December 2000	J. S. Lawler
David Marshall	M.S. electrical engineering	December 1999	J. S. Lawler

Undergraduate Students Participating in Research - Advisor

<u>Name</u>	<u>Start Date</u>	<u>End Date</u>
Candace Patton	September 2011	presently working
Lily Hoang	December 2010	presently working
Yue Cao	May 2008	May 2011
Jonathan Coplon	March 2009	December 2010 (J. Wu co-advisor)
Brad Trento	October 2006	May 2007
Tim Burress	June 2004	December 2004
Jessica Coon	November 2000	May 2002
Keith McKenzie	January 2001	December 2001
Jim Snively	January 2001	December 2001
Robert Ardis	May 2000	May 2001

Host of Visiting Scholars, Researchers, Post-Docs

Mr. Martin Stempfle, visiting student, University of Stuttgart, June 2011 – November 2011

Dr. Ming Li, post-doc, The University of Tennessee, January 2010 – April 2011

Dr. Jung Hee Han, visiting researcher, Global Power Electronics, Inc., August 2008 – August 2009

Dr. Hui Zhang, post-doc, The University of Tennessee, January 2008 – August 2009

Mr. Hyoung Woo Kim, visiting researcher, Korea Electrotechnology Research Institute, November 2007 – February 2008

Dr. Engin Ozdemir, visiting scholar, Kocaeli University, Turkey, January 2007 – October 2007

Dr. Sule Ozdemir, visiting scholar, Kocaeli University, Turkey, January 2007 – September 2007

Student Competition Teams - Advisor

Faculty Co-Advisor, University of Tennessee team, EcoCar2, 2011-2012

Faculty Co-Advisor, University of Tennessee team, Solar Decathlon, 2010-2011

Faculty Co-Advisor, University of Tennessee team, EPA3 Challenge (All-electric vehicle), 2010-2011

Faculty Co-Advisor, University of Tennessee team, FutureTruck Competition, 2002, 2003, 2004. UT team won the Most Innovative Use of Virtual Instrumentation Award by National Instruments in 2004. UT won the Visteon Award for most innovative use of electronics in 2004.

Faculty Advisor, University of Tennessee team, Future Energy Challenge, 2001.

Student Awards

Yutian Cui received a GATE fellowship from US DOE for 2009-2011.

Lakshmi Gopi Reddy received 2nd Place Student Poster Award at the IEEE Power Systems Conference and Exposition in Phoenix, Arizona, in 2011.

Shengnan Li received an Outstanding Presentation Award from IEEE Applied Power Electronics Conference in Ft. Worth, Texas, in 2011.

Shengnan Li received an ESPN Fellowship from UT COE for 2009 – 2011.

Yue Cao received a Myron Zucker travel grant to attend the IEEE Energy Conversion Congress and Exposition in 2009 (San Jose, California) and 2010 (Atlanta, Georgia).

Yue Cao won an award for poster presentation at UT EURECA in April 2009.

Brittnee Robinson received the UT Office of Graduate Studies Fellowship for 2008–2009.

Shengnan Li received a Min H. Kao fellowship from UT EECS for 2007–2010.

Michael Starke received a Bodenheimer fellowship from UT EECS for 2005–2008.

Surin Khomfoi received The University of Tennessee Provost's Citation for Extraordinary Professional Promise in April 2007.

Zhong Du received The University of Tennessee Provost's Citation for Extraordinary Professional Promise in April 2005.

Zhong Du received second place in the Sigma Xi Student Presentation Contest at The University of Tennessee in April 2004.

Melanie Agcaoili received awards for Exemplary Scholar and Stellar Presentation during her participation in the McNair Post Baccalaureate Achievement Program in July 2003.

Sherica Matthews received the University of Tennessee's Gene Mitchell Gray Pioneer Award in 2003.

Burak Ozpineci received The University of Tennessee Provost's Citation for Extraordinary Professional Promise in April 2002.

Burak Ozpineci received the Best Student Paper Award for the IEEE Systems Man and Cybernetics Conference in Phoenix, Arizona, in October 2001.

Teaching Workshops Attended

Fundamentals of Wind Power Plant Design, Madison, Wisconsin, April 7-10, 2008.

IEEE Power Electronics Education Workshop, Recife, Brazil, June 16-17, 2005.

NSF Faculty Workshop on Teaching of Courses in Power Electronics and Electric Drives, Tempe, Arizona, January 3-5, 2002.

NSF Workshop on Multimedia Delivery of Modern Power Electronics Curriculum, Orlando, Florida, November 11-13, 2000.

Effective Teaching Workshop, IEEE Power Engineering Society, Seattle, Washington, July 15-16, 2000.

Teaching

<u>Semester</u>	<u>Course</u>	<u>Description</u>	<u># of Students</u>
Fall 1999	ECE 321 (3)	Electric Energy System Components	17
Spring 2000	ECE 321 (3)	Electric Energy System Components	41
Fall 2000	ECE 481 (3)	Power Electronics	7
	ECE 599 (3)	Solid State Power Conversion	2
Spring 2001	ECE 482 (4)	Power Electronics Circuits	18
Fall 2001	ECE 523 (3)	Power Electronics and Drives	8
	ECE 599 (3)	Drives for Hybrid Electric Vehicles	4
Spring 2002	ECE 495 (1)	FutureTruck Seminar	10
	ECE 623 (3)	Advanced Power Electronics	8
Fall 2002	ECE 692 (3)	Flexible AC Transmission Systems	9
Spring 2003	ECE 495 (1)	FutureTruck Seminar	9
	ECE 599 (3)	Alternative Energy Sources	10
	ECE 691 (1)	Advanced Graduate Seminar	10
Fall 2003	ECE 481 (3)	Power Electronics	40
	ECE 599 (3)	Solid State Power Conversion	10
Spring 2004	ECE 495 (1)	FutureTruck Seminar	13
	ECE 691 (1)	Advanced Graduate Seminar	18
	ECE 623 (3)	Advanced Power Electronics	13
Fall 2004	ECE 692 (3)	Utility Applications of Power Electronics	16
Spring 2005	ECE 599 (3)	Alternative Energy Sources	19
	ECE 691 (1)	Advanced Graduate Seminar	17
Fall 2005	ECE 481 (3)	Power Electronics	18
	ECE 599 (3)	Solid State Power Conversion	7
	ECE 691 (1)	Advanced Graduate Seminar	17
Spring 2006	ECE 626 (3)	Power Semiconductor Devices	9
	ECE 691 (1)	Advanced Graduate Seminar	16
Fall 2006	ECE 625 (3)	Utility Applications of Power Electronics	9
Spring 2007	ECE 525 (3)	Alternative Energy Sources	17
	ECE 691 (1)	Advanced Graduate Seminar	14
Fall 2007	ECE 481 (3)	Power Electronics	12
	ECE 523 (3)	Power Electronics and Drives	7
Spring 2008	ECE 482 (3)	Power Electronics Circuits	5
	ECE 599 (3)	Power Electronics Circuits	9
	ECE 691 (1)	Advanced Graduate Seminar	16
Fall 2008	ECE 625 (3)	Utility Applications of Power Electronics	10
Spring 2009	ECE 525 (3)	Alternative Energy Sources	16
	ECE 691 (1)	Advanced Graduate Seminar	14
Fall 2009	ECE 481 (3)	Power Electronics	27
	ECE 523 (3)	Power Electronics and Drives	9
Fall 2010	ECE 625 (3)	Utility Applications of Power Electronics	14
Spring 2011	ECE 525 (3)	Alternative Energy Sources	30
Fall 2011	ECE 481 (3)	Power Electronics	25
	ECE 599 (3)	Solid State Power Conversion	12
Spring 2012	ECE 626 (3)	Power Semiconductor Devices	

Student Teaching Evaluations for Last Five Years

The Student Assessment of Instruction System (SAIS) evaluations of my courses during the last five years are summarized in the tables below. The table shows the student responses to General Evaluation items.

The scale is 1 to 5, with 1 the lowest and 5 the highest rating.

<u>Semester</u>	<u>Course</u>	<u># of Students</u>	<u>SAIS Scores</u>			
			<u>Course Overall</u>	<u>Course Content</u>	<u>Instructor Contribution</u>	<u>Teaching Effectiveness</u>
Fall 2004	ECE 692(3)	16	4.42	4.33	4.17	4.33
Spring 2005	ECE 599(3)	19	4.65	4.18	4.65	4.53
	ECE 691(1)	17	4.59	4.29	4.41	4.56
Fall 2005	ECE 481(3)	18	4.22	4.06	4.17	4.22
	ECE 599(3)	7	4.83	4.50	4.83	4.67
	ECE 691(1)	17	4.57	4.43	4.50	4.43
Spring 2006	ECE 626(3)	9	4.43	4.14	4.43	4.14
	ECE 691(1)	16	4.69	4.69	4.62	4.69
Fall 2006	ECE 625(3)	9	4.75	4.63	4.75	4.63
Spring 2007	ECE 525(3)	17	4.18	4.00	4.29	4.06
	ECE 691(1)	14	4.82	4.73	4.73	4.73
Fall 2007	ECE 481(3)	12	3.91	3.73	4.18	4.36
	ECE 523(3)	7	4.67	4.50	4.50	4.67
Spring 2008	ECE 599(3)	8	4.13	3.75	4.25	4.38
	ECE 691(1)	12	4.42	4.25	4.33	4.33
Fall 2008	ECE 625(3)	8	4.38	4.38	4.38	4.25
Spring 2009	ECE 525(3)	15	4.40	4.60	4.67	4.60
	ECE 691(1)	14	4.50	4.50	4.36	4.43
Fall 2009	ECE 481(3)	27	3.96	4.04	4.22	4.09
	ECE 523(3)	9	4.86	4.71	4.71	5.00
Fall 2010	ECE 625(3)	9	4.71	4.57	4.86	4.86
Spring 2011	ECE 525(3)	30	4.10	4.00	4.25	4.25

Research Grants and Contracts

Funded and in Progress:

- August 2011 – August 2016, “Center for Ultra-wide-area Resilient Electric Energy Transmission Networks,” NSF, \$18.5 million, PI: K. Tomsovic, co-PIs: Y. Liu, F. Wang, **L. M. Tolbert (credit: 20%)**, F. Li. UT is Lead Institution with RPI, Northeastern University, Tuskegee University.
- January 2012 – December 2014, “Cascaded Micro Inverter PV System for Reduced Costs,” Delphi Automotive Systems, contract to DOE SEGIS program, \$435,288, **PI: L. M. Tolbert (credit: 100%)**.
- June 2010 – June 2013, “Scalable and Flat Controls for Reliable Power Grid Operation with High Renewable Penetration,” Global Climate Energy Project, UT share: \$877,500, PI: K. Tomsovic, co-PIs: F. Li, **L. M. Tolbert (shared credit: 30%)**. UT is Lead Institution with Univ. of Illinois, RPI, and Northeastern University as team members.
- November 2011 – September 2012, “Isolation and Buffers for Smart Integrated Power Module,” Oak Ridge National Laboratory, \$80,000, **PI: L. M. Tolbert (shared credit: 50%)**, co-PI: Ben Blalock.
- July 2011 – June 2012, “Integrated High-temperature Phase-leg Power Modules,” II-VI Foundation, \$85,744, PI: B. J. Blalock, co-PIs: F. Wang, **L. M. Tolbert (shared credit: 33%)**
- May 2005 – September 2012, “Power Electronics Evaluation for DER and T&D,” Oak Ridge National Laboratory, \$665,000, **PI: L. M. Tolbert (shared credit: 80%)**, co-PIs: S. K. Islam, F. Li, H. Qi, X. Wang.

Funded and Completed:

- August 2010 – January 2012, “High Efficiency Wide-Band-Gap Power Devices,” Auburn University, \$345,965, **PI: L. M. Tolbert (shared credit: 34%)**, F. Wang, B. Blalock.
- February 2011 – January 2012, “Novel Package to Reduce Stray Inductance in IGBT Modules Used for Volkswagen’s EVs and HEVs,” Volkswagen, \$50,000, **PI: L. M. Tolbert (credit: 100%)**.
- January 2010 – January 2012, “Solar Decathlon 2011,” National Renewable Energy Laboratory, \$100,000, PI: E. Stach, co-PIs: J. Rose, B. Klinkhammer, D. Shmerler, **L. M. Tolbert (shared credit: 20%)**.
- November 2010 – September 2011, “Packaging to Reduce Stray Inductance in Power Electronics Modules,” Oak Ridge National Laboratory, \$68,023, **PI: L. M. Tolbert (credit: 100%)**.
- September 2008 – August 2011, “A Resilient Real-Time System for a Secure and Reconfigurable Power Grid,” National Science Foundation, \$50,000, PI: H. Qi, co-PIs: **L. M. Tolbert (shared credit: 20%)**, F. Li, X. Wang.
- July 2008 – June 2011, “High Temperature Power Electronics,” II-VI Foundation, \$326,250, **PI: L. M. Tolbert (shared credit: 40%)**, co-PIs: S. K. Islam, B. J. Blalock
- June 2010 – May 2011, “Testing System for High-temperature, High-density SiC Power Electronics Converters,” Defense University Research Instrumentation Program, Office of Naval Research, \$502,948, PI: Fred Wang, **co-PI: L. M. Tolbert (shared credit: 50%)**.
- August 2010 – July 2011, “H₂vBE: A Case Study of the Reliability, Cost, and Environmental Sustainability of Hydrogen Fuel,” Environmental Protection Agency, \$10,000, PI: P. Frymier, co-PIs: D. Irick, **L. M. Tolbert (shared credit: 20%)**, C. Cherry, R. Counce.
- November 2010 – May 2011, “High Temperature Silicon Carbide (SiC) Gate Driver,” US Army SBIR Topic A10-132, (Subcontract to GPE, Inc., SBIR Phase I), \$20,620, PI: B. J. Blalock, co-PIs: F. Wang, **L. M. Tolbert (credit: 33%)**.
- December 2009 – December 2010, “High Temperature Universal Gate Drives,” Oak Ridge National Laboratory, \$175,000, **PI: L. M. Tolbert (shared credit: 40%)**, co-PIs: B. J. Blalock, S. K. Islam.

- February 2010 – October 2010, “Modeling High Temperature Power Electronic Modules,” Global Power Electronics, Inc., \$99,083, **PI: F. Wang, co-PI: L. M. Tolbert (shared credit: 50%)**.
- November 2009 – October 2010, “Packaging to Reduce Stray Inductance in Power Electronics Modules,” Oak Ridge National Laboratory, \$85,000, **PI: L. M. Tolbert (credit: 100%)**.
- November 2008 – November 2009, “Highly Integrated SOI-Based Gate Drives,” Oak Ridge National Laboratory, \$155,989, **PI: L. M. Tolbert (shared credit: 40%)**, co-PIs: B. J. Blalock, S. K. Islam.
- October 2008 – October 2009, “Active Filter to Reduce DC Link Capacitance,” Oak Ridge National Laboratory, \$43,909, **PI: L. M. Tolbert (credit: 100%)**.
- October 2008 – October 2009, “Finite Element Analysis and Modeling of Interior Permanent Magnet Electric Machines,” Oak Ridge National Laboratory, \$41,557, **PI: L. M. Tolbert (credit: 100%)**.
- September 2007 – August 2008, “A Resilient Real-Time System for a Secure and Reconfigurable Power Grid,” NSF, \$101,500, **PI: H. Qi, co-PIs: L. M. Tolbert (shared credit: 20%)**, F. Li, X. Wang.
- January 2006 – September 2008, “High Temperature Gate Drives,” Oak Ridge National Laboratory, \$245,000, **PI: S. K. Islam, co-PIs: L. M. Tolbert (shared credit: 30%)**, B. J. Blalock.
- October 2006 – September 2008, “Advanced Power Converter System Using High-Temperature, High-Power Density SiC Devices,” U.S. Department of Energy, (Subcontract to Aegis Technology Inc. STTR Phase II, DEFG02-05ER86234), \$225,000, **PI: L. M. Tolbert (credit: 100%)**.
- October 2006 – September 2008, “Magnetic-less DC-DC Converter for HEV Applications,” Oak Ridge National Laboratory, \$151,552, **PI: L. M. Tolbert (credit: 100%)**.
- October 2006 – September 2008, “Finite Element Analysis and Modeling of Permanent Magnet Machines,” Oak Ridge National Laboratory, \$84,185, **PI: L. M. Tolbert (credit: 100%)**.
- January 2006 – July 2008, “DC Circuits for Fuel Cell Aggregation,” Oak Ridge National Laboratory, \$86,620, **PI: L. M. Tolbert (credit: 100%)**.
- August 2007 – April 2008, “High Power Compact Electronics For Naval Applications,” U.S. Navy (Subcontract to Aegis Technology, Inc., STTR Phase I), \$21,000, **PI: L. M. Tolbert (credit: 100%)**.
- July 2006 – April 2007, “High Efficiency Electronic Ballasts Using SiC,” U.S. Department of Energy, (Subcontract to Epic Systems, Inc., SBIR Phase I), \$30,000, **PI: L. M. Tolbert (credit: 100%)**.
- October 2006 – September 2007, “Fault Diagnosis and Reconfiguration of a Multilevel Converter,” Oak Ridge National Laboratory, \$40,622, **PI: L. M. Tolbert (shared credit: 100%)**.
- October 2006 – September 2007, “Wide Band Gap Semiconductor Characterization and Modeling,” Oak Ridge National Laboratory, \$39,362, **PI: L. M. Tolbert (shared credit: 100%)**.
- March 2001 – December 2006, “CAREER: Power Electronics Circuits for Renewable and Distributed Energy Systems,” National Science Foundation, \$375,000, **PI: L. M. Tolbert (credit: 100%)**.
- August 2003 – August 2006, “Power Electronics Research for Distribution Systems,” EPRI Solutions, \$73,805, **PI: L. M. Tolbert (credit: 100%)**.
- October 2005 – September 2006, “Economic Evaluation of Reactive Power Compensation,” Oak Ridge National Laboratory, \$10,934, **PI: L. M. Tolbert (credit: 100%)**.
- July 2005 – March 2006, “Advanced Power Converter System Using High-Temperature, High-Power Density SiC Devices,” U.S. Department of Energy, (SBIR Subcontract to Aegis Technology Inc.), \$30,000, **PI: L. M. Tolbert (credit: 100%)**.
- June 2003 – December 2006, “Power Electronics and Controls for Hybrid Electric Vehicles,” Oak Ridge National Laboratory, \$707,311, **PI: L. M. Tolbert (shared credit: 60%)**, co-PI: J. N. Chiasson.

- 2004 – 2005, “High Temperature, High Power Density Electronic Devices,” U.S. Department of Navy, SBIR N65538-04-M-0146, \$20,789. (Subcontract IJ Research, Inc.), **PI: L. M. Tolbert (credit: 100%)**.
- 2004 – 2005, “SiC MOSFET Test and Loss Modeling,” National Renewable Energy Laboratory, TAM-4-3320-01, (Subcontract to Peregrine Power, Inc.), \$49,567, **PI: L. M. Tolbert (credit: 100%)**.
- 2001 – 2003, “Characterization and Application of SiC MOSFETs,” Oak Ridge National Laboratory, \$119,992, **PI: L. M. Tolbert (shared credit: 50%)**, co-PI: S. K. Islam.
- 2001 – 2003, “Electric Machinery Controls Research and Development,” U.S. Department of Energy, \$237,292, PI: J. N. Chiasson, **co-PI: L. M. Tolbert (shared credit: 40%)**.
- 2000 – 2001, “Advanced Mobile Military Generator Set,” U.S. Army CECOM, \$128,900, **PI: L. M. Tolbert (credit: 100%)**.

Publications

Refereed Journal Articles

- [1] T. G. Habetler, F. Profumo, M. Pastorelli, **L. M. Tolbert**, "Direct Torque Control of Induction Machines Using Space Vector Modulation," *IEEE Transactions on Industry Applications*, vol. 28, no. 5, Sept./Oct. 1992, pp. 1045-1053.
- [2] **L. M. Tolbert**, L. J. Degenhardt, J. T. Cleveland, "Reliability of Lightning-Resistant Overhead Lines," *IEEE Industry Applications Magazine*, July/August 1997, pp. 17-21.
- [3] J. S. Hsu, J. D. Kueck, M. Olszewski, P. J. Otaduy, D. A. Casada, **L. M. Tolbert**, "Comparison of Induction Motor Field Efficiency Evaluation Methods," *IEEE Transactions on Industry Applications*, vol. 34, no. 1, Jan. 1998, pp. 117-125.
- [4] **L. M. Tolbert**, F. Z. Peng, T. G. Habetler, "Multilevel Converters for Large Electric Drives," *IEEE Transactions on Industry Applications*, vol. 35, no. 1, Jan./Feb. 1999, pp. 36-44.
- [5] **L. M. Tolbert**, T. G. Habetler, "Novel Multilevel Inverter Carrier-Based PWM Method," *IEEE Transactions on Industry Applications*, vol. 35, no. 5, Sept./Oct. 1999, pp. 1098-1107.
- [6] **L. M. Tolbert**, F. Z. Peng, T. G. Habetler, "A Multilevel Converter-Based Universal Power Conditioner," *IEEE Transactions on Industry Applications*, vol. 36, no. 2, Mar./Apr. 2000, pp. 596-603.
- [7] **L. M. Tolbert**, F. Z. Peng, T. G. Habetler, "Multilevel PWM Methods at Low Modulation Indices," *IEEE Transactions on Power Electronics*, vol. 15, no. 3, July 2000, pp. 719-725.
- [8] **L. M. Tolbert**, F. Z. Peng, T. Cunyngham, J. N. Chiasson, "Charge Balance Control Schemes for Cascade Multilevel Converter in Hybrid Electric Vehicles," *IEEE Transactions on Industrial Electronics*, vol. 49, no. 5, Oct. 2002, pp. 1058-1065.
- [9] B. Ozpineci, **L. M. Tolbert**, S. K. Islam, M. Hasanuzzaman "System Impact of SiC Power Devices," *International Journal of High Speed Electronics and Systems*, vol. 12, no. 2, 2002, pp. 439-448.
- [10] **L. M. Tolbert**, W. A. Peterson, T. J. Theiss, M. B. Scudiere, "Gen-Sets: Electronic Power Conversion System for an Advanced Mobile Generator Set," *IEEE Industry Applications Magazine*, vol. 9, no. 2, March/April 2003, pp. 48-54.
- [11] J. N. Chiasson, **L. M. Tolbert**, K. J. McKenzie, Z. Du, "Control of a Multilevel Converter Using Resultant Theory," *IEEE Trans. on Control Systems Technology*, vol. 11, no. 3, May 2003, pp. 345-354.
- [12] Y. Xu, **L. M. Tolbert**, F. Z. Peng, J. N. Chiasson, J. Chen, "Compensation-based Non-active Power Definition," *IEEE Power Electronics Letters*, vol. 1, no. 2, June 2003, pp. 45-50.
- [13] B. Ozpineci, **L. M. Tolbert**, "Characterization of SiC Schottky Diodes at Different Temperatures," *IEEE Power Electronics Letters*, vol. 1, no. 2, June 2003, pp. 54-57.
- [14] J. N. Chiasson, **L. M. Tolbert**, Y. Lu, "A Library of SIMULINK Blocks for Real-Time Control of HEV Traction Drives," *SAE Transactions Journal of Engines*, September 2003, pp. 2376-2385.
- [15] **L. M. Tolbert**, B. Ozpineci, S. K. Islam, F. Z. Peng, "Impact of SiC Power Electronic Devices for Hybrid Electric Vehicles," *SAE Transactions Journal of Passenger Cars - Electronic and Electrical Systems*, September 2003, pp. 765-771.
- [16] J. N. Chiasson, **L. M. Tolbert**, K. McKenzie, Z. Du, "Real-Time Computer Control of a Multilevel Converter Using the Mathematical Theory of Resultants," *Mathematics and Computers in Simulation*, vol. 63, Nov. 2003, pp. 197-208.

- [17] M. Hasanuzzaman, S. K. Islam, **L. M. Tolbert**, "Effects of Temperature Variation (300 – 600 K) in MOSFET Modeling in 6H-Silicon Carbide," *Solid State Electronics*, vol. 48, no. 1, January 2004, pp. 125-132.
- [18] J. N. Chiasson, **L. M. Tolbert**, K. J. McKenzie, Z. Du, "A Complete Solution to the Harmonic Elimination Problem," *IEEE Transactions on Power Electronics*, vol. 19, no. 2, Mar. 2004, pp. 491-499.
- [19] G. J. Su, F. Z. Peng, **L. M. Tolbert**, "A Passive Soft Switching Snubber for PWM Inverters," *IEEE Transactions on Power Electronics*, vol. 19, no. 2, March 2004, pp. 363-370.
- [20] J. N. Chiasson, **L. M. Tolbert**, K. J. McKenzie, Z. Du, "A Unified Approach to Solving the Harmonic Elimination Equations in Multilevel Converters," *IEEE Transactions on Power Electronics*, vol. 19, no. 2, March 2004, pp. 478-490.
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- [25] J. N. Chiasson, **L. M. Tolbert**, K. J. McKenzie, Z. Du, "Elimination of Harmonics in a Multilevel Converter using the Theory of Symmetric Polynomials and Resultants," *IEEE Transactions on Control Systems Technology*, vol. 13, no. 2, March 2005, pp. 216-223.
- [26] B. Ozpineci, **L. M. Tolbert**, J. N. Chiasson, "Harmonic Optimization of Multilevel Converters Using Genetic Algorithms," *IEEE Power Electronics Letters*, vol. 3, no. 3, September 2005, pp. 92-95.
- [27] K. Wang, J. Chiasson, M. Bodson, **L. M. Tolbert**, "A Nonlinear Least-Squares Approach for Identification of the Induction Motor Parameters," *IEEE Transactions on Automatic Control*, vol. 50, no. 10, October 2005, pp. 1622-1628.
- [28] Z. Du, **L. M. Tolbert**, J. N. Chiasson, "Active Harmonic Elimination for Multilevel Converters," *IEEE Transactions on Power Electronics*, vol. 21, no. 2, March 2006, pp. 459-469.
- [29] M. Shen, J. Wang, A. Joseph, F. Z. Peng, **L. M. Tolbert**, D. J. Adams, "Constant Boost Control of the Z-Source Inverter to Minimize Current Ripple and Voltage Stress," *IEEE Transactions on Industry Applications*, vol. 42, no. 3, May/June 2006, pp. 770-778.
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- [32] M. Hasanuzzaman, S. K. Islam, **L. M. Tolbert**, B. Ozpineci, "Design, Modeling, Testing, and SPICE Parameter Extraction of DIMOS Transistor in 4H-Silicon Carbide," *International Journal of High Speed Electronics and Systems*, vol. 16, no. 2, 2006, pp. 733-746.

- [33] K. Wang, J. Chiasson, M. Bodson, **L. M. Tolbert**, "An Online Rotor Time Constant Estimator for the Induction Machine," *IEEE Trans. on Control Systems Technology*, vol. 15, no. 2, Mar. 2007, pp. 339-348.
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- [35] S. Khomfoi, **L. M. Tolbert**, "Fault Diagnostic System for a Multilevel Inverter Using a Neural Network," *IEEE Transactions on Power Electronics*, vol. 22, no. 3, May 2007, pp. 1062-1069.
- [36] J. Campbell, **L. M. Tolbert**, C. W. Ayers, B. Ozpineci, K. Lowe, "Two-Phase Cooling Method Using R134a Refrigerant to Cool Power Electronics Devices," *IEEE Transactions on Industry Applications*, vol. 43, no. 3, May/June 2007, pp. 648-656.
- [37] **L. M. Tolbert**, H. Zhang, M. S. Chinthavali, B. Ozpineci, "SiC-based Power Converters for High Temperature Applications," *Materials Science Forum*, vols. 556-557, Sept. 2007, pp. 965-970.
- [38] X. Yu, M. R. Starke, **L. M. Tolbert**, B. Ozpineci, "Fuel Cell Power Conditioning for Electric Power Applications: A Summary," *IET Electric Power Applications*, vol. 1, no. 5, Sept. 2007, pp. 643-656.
- [39] Y. Xu, **L. M. Tolbert**, J. N. Chiasson, F. Z. Peng, J. B. Campbell, "A Generalised Instantaneous Nonactive Power Theory for STATCOM," *IET Electric Power Applications*, vol. 1, no. 6, Nov. 2007, pp. 853-861.
- [40] F. Khan, **L. M. Tolbert**, "A Multilevel Modular Capacitor Clamped DC-DC Converter," *IEEE Transactions on Industry Applications*, vol. 43, no. 6, Nov./Dec. 2007, pp. 1628-1638.
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- [42] S. Khomfoi, **L. M. Tolbert**, "Fault Diagnosis and Reconfiguration for Multilevel Inverter Drive Using AI Based Techniques," *IEEE Trans. on Industrial Electronics*, vol. 54, no. 6, Dec. 2007, pp. 2954-2968.
- [43] M. Shen, F. Z. Peng, **L. M. Tolbert**, "Multilevel DC-DC Power Conversion System with Multiple DC Sources," *IEEE Transactions on Power Electronics*, vol. 23, no. 1, Jan. 2008, pp. 420-426.
- [44] Z. Du, **L. M. Tolbert**, J. N. Chiasson, B. Ozpineci, "Reduced Switching Frequency Active Harmonic Elimination for Multilevel Converters," *IEEE Transactions on Industrial Electronics*, vol. 55, no. 4, April 2008, pp. 1761-1770.
- [45] F. Li, W. Zhang, **L. M. Tolbert**, J. D. Kueck, D. T. Rizy, "A Framework to Quantify the Economic Benefit from Local VAR Compensation," *International Review of Electrical Engineering (IREE)*, vol. 3, no. 6, Nov./Dec. 2008, pp. 989-998.
- [46] M. Chinthavali, B. Ozpineci, **L. M. Tolbert**, H. Zhang, "Summary of SiC Research for Transportation Applications at ORNL," *Materials Science Forum*, vols. 600-603, 2009, pp. 1239-1242.
- [47] B. Ozpineci, M. Chinthavali, **L. M. Tolbert**, A. Kashyap, A. Mantooth, "A 55 kW Three-Phase Inverter with Si IGBTs and SiC Schottky Diodes," *IEEE Transactions on Industry Applications*, vol. 45, no. 1, Jan./Feb. 2009, pp. 278-285.
- [48] Z. Du, **L. M. Tolbert**, J. N. Chiasson, B. Ozpineci, "Fundamental Frequency Switching Strategies for a Seven-Level Hybrid Cascaded H-bridge Multilevel Inverter," *IEEE Transactions on Power Electronics*, vol. 24, no. 1, Jan. 2009, pp. 25-33.
- [49] F. H. Khan, **L. M. Tolbert**, "Multiple Load-Source Integration in a Multilevel Modular Capacitor Clamped DC-DC Converter Featuring Fault Tolerant Capability," *IEEE Transactions on Power Electronics*, vol. 24, no. 1, Jan. 2009, pp. 14-24.

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- [51] F. H. Khan, **L. M. Tolbert**, W. E. Webb, "Hybrid Electric Vehicle Power Management Solutions Based on Isolated and Non-Isolated Configurations of MMCCC Converter," *IEEE Transactions on Industrial Electronics*, vol. 56, no. 8, Aug. 2009, pp. 3079-3095.
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- [55] M. A. Huque, **L. M. Tolbert**, B. Blalock, S. K. Islam, "SOI-Based High-Voltage, High-Temperature Integrated Circuit Gate Driver for SiC-Based Power FETs," *IET Proceedings on Power Electronics*, vol. 3, 2010, pp. 1001 - 1009.
- [56] Y. Xu, **L. M. Tolbert**, J. D. Kueck, D. T. Rizy, "Voltage and Current Unbalance Compensation Using a STATCOM," *IET Proceedings on Power Electronics*, vol. 3, no. 6, 2010, pp. 977-988.
- [57] H. Zhang, **L. M. Tolbert**, "Efficiency Impact of SiC Power Electronics for Modern Wind Turbine Full Scale Frequency Converter," *IEEE Trans. on Industrial Electronics*, vol. 58, no. 1, Jan./Feb. 2011, pp. 21-28.
- [58] W. Zhang, F. Li, **L. M. Tolbert**, "Interpolation Approximation of Voltage Stability Constrained OPF (VSCOPF) for Reactive Power Planning," *European Transactions on Electric Power*, vol. 21, no. 1, Jan. 2011, pp. 155-164.
- [59] H. Zhang, **L. M. Tolbert**, B. Ozpineci, "Impact of SiC Devices on Hybrid Electric and Plug-in Hybrid Electric Vehicles," *IEEE Trans. on Industry Applications*, vol. 47, no. 2, Mar./Apr. 2011, pp. 912-921.
- [60] F. Filho, **L. M. Tolbert**, B. Ozpineci, "Real Time Selective Harmonic Minimization for Multilevel Inverters Connected to Solar Panels Using Artificial Neural Network Angle Generation," *IEEE Transactions on Industry Applications*, vol. 47, no. 5, Sept.-Oct. 2011, pp. 2117-2124.
- [61] B. Ozpineci, **L. M. Tolbert**, "Silicon Carbide: Smaller, Faster, Tougher," *IEEE Spectrum*, vol. 48, no. 10, October 2011, pp. 45-66.
- [62] H. Qi, X. Wang, **L. M. Tolbert**, F. Li, F. Z. Peng, P. Ning, M. Amin, "A Resilient Real-Time System Design for a Secure and Reconfigurable Power Grid," *IEEE Transactions on Smart Grid*, vol. 2, no. 4, December 2011, pp. 770-781.
- [63] W. Qian, H. Cha, F. Z. Peng, **L. M. Tolbert**, "A 55-kW Variable 3X DC-DC Converter for Plug-in Hybrid Electric Vehicles," *IEEE Transactions on Power Electronics*, vol. 27, 2012, (accepted – in press).

Book Chapters and Contributions to Edited Volumes

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- [13] "Utility Applications of Power Electronics," Invited Presentations, Zhejiang University, Shanghai Jiaotong University, NUAU, and Southeast University, China, July 2008.
- [14] "SiC's Potential Impact on the Design of a Wind Generation System," Invited keynote, Vestas Power Program Annual Symposium, Aalborg, Denmark, October 27, 2008.
- [15] "SiC Power Electronics Applications for Transportation and Energy," Invited Presentation, Huazhong University of Science and Technology (Wuhan), China, May 15, 2009.
- [16] "Power Electronics Basic Cells and Compensation Theory," Invited Presentation, Xi'an Jiaotong University, Xi'an, China, May 22, 2009.
- [17] "Energy and Transportation Applications of Silicon Carbide (SiC) Power Electronics," Invited Plenary, Brazilian Power Electronics Conference, Bonito, Brazil, October 1, 2009.
- [18] "Application of SiC Power Electronics," Invited Presentation, IEEE Industry Applications Society Regional Speakers Program, Taipei, Taiwan, March 11, 2010
- [19] "Multilevel Converter Interface with Solar Panels," Invited Presentation, China Electric Power Research Institute, Nanjing, China, March 28, 2010
- [20] "Power Electronics Applications for Transportation and Energy," Invited Presentation, Provincial Electrical Authority, Bangkok, Thailand, May 11, 2010.
- [21] "High Power SiC Modules for HEVs and PHEVs," Invited Paper, IEEE International Power Electronics Conference, Sapporo, Japan, June 21-24, 2010.
- [22] "Power Electronics for Hybrid Electric Vehicles," Invited Presentation, Chattanooga Engineers Club, August 9, 2010.