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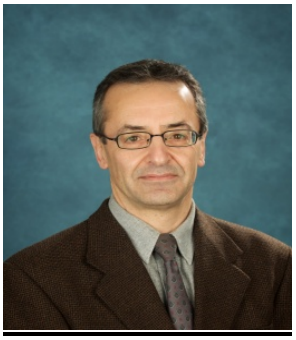
Curriculum Vitae

REZA IRAVANI



PART A

Position: Professor

Address: Department of Electrical and Computer Engineering
University of Toronto
10 King's College Road
Toronto, Ontario, Canada M5S 3G4
Tel: (416) 978-7755
E-mail: iravani@ecf.utoronto.ca

Education:
Ph.D., Electrical Engineering, University of Manitoba, Winnipeg, Manitoba, Canada, 1985.
M.Sc., Electrical Engineering, University of Manitoba, Winnipeg, Manitoba, Canada, 1981.
B.Sc., Electrical Engineering, Polytechnique University, Tehran, Iran, 1977.

Research Areas

[1] Power Electronics and Applications of Power Electronics in Electric Energy Systems
[2] Grid Integration of Renewables (Wind and Solar Power) and Energy Storage Systems
[3] Distributed Energy Resources and Microgrid Systems
[4] Modeling and Analysis of Electromagnetic Transients in Electric Power Systems
[5] Real-Time Modeling and Analysis of Electric Power Systems

Academic and Research Positions

[1] Professor, Department of Electrical and Computer Engineering, University of Toronto, Toronto, Ontario (1993-present).
[2] Associate Professor, Department of Electrical Engineering, University of Toronto, Toronto, Ontario (1990-1993).
[3] Assistant Professor, Department of Electrical Engineering, University of Toronto, Toronto, Ontario (1987-1990).
[4] Assistant Professor, Department of Electrical Engineering, University of Windsor, Windsor, Ontario (1985-1987).

[5] Postdoctoral Fellow, Department of Electrical Engineering, University of Manitoba, Winnipeg, Manitoba (1985).
[6] Research Assistant, Department of Electrical Engineering, University of Manitoba, Winnipeg, Manitoba (1980-1984).

Industrial Experience, Positions, and Consulting

[1] Consulting Engineer, Bonyan Consulting Engineering, Tehran, Iran (1977-1979)
[2] Consultant for Spar Aerospace, Toronto, Ontario (1988 -1989)
[3] Consultant for Honeywell, Power Electronics Division, Mississauga, Ontario (2003-2009)
[4] Specialized Studies Engineer, Ontario Hydro, Toronto, Ontario, (1990)
[5] Consultant for Trench Group, Coil Division, Toronto, Ontario (1992-2003)
[6] Visiting Scientist/Researcher, Inverpower Limited (1993-1994)
[7] Consultant for Trench Group, Instrument Transformer Division, Toronto, Ontario (1992-2005).
[8] Consultant for Inver-Power Controls Ltd., Toronto, Ontario (1995-1999).
[9] Consultant for Scarborough Public Utilities Commission, Scarborough, Ontario (1995-1997)
[10] Consultant for Georgia Power, Atlanta, Georgia (1998-2000)
[11] Consultant for Marion Steel, Marion, Ohio (1997-1999)
[12] Consultant for Birmingham Steel, Cartersville, Georgia (1997-2000)
[13] Consultant for GE Power Management, Markham, Ontario (2000)
[14] Visiting Scientist, Inverpower Controls Ltd, Mississauga, Canada (2001-2002)
[15] Consultant for ABB Canada, Montreal, Quebec (2000-2001)
[16] Consultant for Johns Manville International Inc, Columbus, Ohio, USA (2000-2001)
[17] Consultant for Amsdell Inc, Toronto, Ontario (1997-2001)
[18] Consultant for Ontario Council on Graduate Studies (2006)
[19] Consultant for Eaton Corporation, Mississaga, Ontario (2010-present)
[20] Consultant for Vale Inc, Sudbury, Ontario (2011-present)
[21] Consultant for Hatch Associates, Mississaga, Ontario (2011-present)
[22] Consultant for Quanta Technology, Toronto, Ontario (2011-present)

Major Administrative Positions

[1] President, Trantek Power Inc (Start-up Company), Toronto, Ontario (1995-2002)
[2] President, Arch Power Systems Inc (Start-up Company), Toronto, Ontario (2007-present)
[3] Director, Centre for Applied Power Electronics (CAPE), ECE Department, University of Toronto (1998-Present)
[4] Chair, Power Devices and Systems Research Group, ECE Department, University of Toronto (1992-1997)
[5] Chair, Energy Systems Group, ECE Department, University of Toronto (2006)

HONORS AND AWARDS

[1] Fellow, Royal Society of Canada, 2017
[2] Holder of L Lau Research Chair, ECE Department, University of Toronto (2015-2019)
[3] Guest Professor, North China Electric Power University, Beijing, China (2014-2017)
[4] Distinguished Member Award, CIGRE (2014)
[5] IEEE Power & Energy Society Service Award (2014)
[6] Holder of L Lau Research Chair, ECE Department, University of Toronto (2009-2014)

[7] Holder of L Lau Research Chair, ECE Department, University of Toronto (2004-2009)
[8] IEEE PES Working Group Recognition Award for the Task Force Outstanding Technical Report (2000)
[9] IEEE PES Working Group Recognition Award for Outstanding IEEE Technical Report TP-133-0 (1999)
[10] Faculty of Applied Science and Engineering, U of T, Nomination for Teaching Award (1996-1997)
[11] U of T, ECE Club, 4th-Year Teacher of the Year Award (1996-1997)
[12] U of T, ECE Club, 4th-Year Teacher of the Year Award (1992-1993)
[13] Faculty of Applied Science and Engineering, U of T, Nominations for Teaching Award (1992-1993)
[14] U of T, EE Department, EE Club, 2nd-Year Teacher of the Year Award (1991-1992)
[15] University of Manitoba Postdoctoral Fellowship (1995)

Research Funding

1985-86	University of Windsor President's Grant	$4,200.00/1 year
1985-86	University of Windsor Travel Grant	$1,500.00/1 year
1986-88	NSERC Operating Grant (Individual)	$57,000/3 years
1989-91	NSERC Operating Grant (Individual)	$63,000/3 years
1989-91	Power Electronics Research Facility (PI: Lavers)	$90,000/2 years
1990-91	EPRI Research Contract (Individual)	$90,000/1.5 years
1990-91	Ontario Hydro Research Contract (Individual)	$30,000/1.5 years
1991-93	Power Electronics Research Facility (PI: Lavers)	$180,000/2 years
1992-96	NSERC Research Grant (Individual)	$124,000/4 years
1994-95	POSCO Co. Research Contract (Individual)	$41,000/1 year
1994-94	CIDA Microfund Project (Individual)	$4,300/1 year
1994-95	CIDA National Elements (Individual)	$37,000/1 year
1993-95	CIDA Power Project (PI)	$165,000/2 years
1995-2000	Industry-NSERC CRD Grant (Individual)	$1,517,000/5 years
1996-1997	NSERC Research Grant (Individual)	$31,000/1 year
1996-1997	VRP Technologies Research Contract (PI)	$44,000/1 year
1997-2001	NSERC Research Grant (Individual)	$138,000/4 years
1998-1999	Trench Electric Research Contract (Individual)	$90,000/2 years
1999-2000	Amsdell Inc. Research Contract (Individual)	$200,000/1.5 years
2000-2003	Industry-NSERC CRD Grant (Individual)	$963,900/3 years
1999-2004	Ontario R&D Challenge Funds - ORDCF (PI)	$5,000,000/5 years
2001-2005	NSERC Discovery Grant (Individual)	$210,800/4 years
2001-2002	NSERC Equipment Grant (Individual)	$17,600/1 year
2004-2005	Honeywell Research Grant (Individual)	$26,700/1 years
2004-2005	DPS Research Grant (Individual)	$360,000/2 years
2005-2006	Honeywell Research Grant (Individual)	$30,000/1 year
2004-2007	Industry-NSERC CRD Grant (Individual)	$1,237,500/3 years
2004-2005	NSERC I2I Grant (Individual)	$125,000/1 year
2004-2009	L. Lau Chair Research Grant (Individual)	$50,000/ 5 years
2005-2010	NSERC Discovery Grant (Individual)	$275,000/5 years
2005-2006	Industry Grant (Individual)	$460,000/1.5 years
2006-2007	Honeywell Research Grant (Individual)	$12,500/1.5 years

2006-2007	Industry Grant (Individual)	$297,600/1.5 years
2006-2007	NSERC Equipment Grant (Individual)	$57,922/1 year
2006-2010	ORF-RE Grant (PI)	$10,470,000/5 years
2006-2007	Honeywell Research Grant (Individual)	$24,000/1 year
2007-2009	OCE-Honeywell Research Grant (Individual)	$1,300,000/3 year
2006-2007	Toronto Hydro (Individual)	$ 128,000/ 1 year
2007-2008	Natural Resource Canada Grant (individual)	$98,000/2 years
2008-2012	ORF-RE Grant (PI- P. Jain)	$16,617,000/5 years
2008-2012	NSERC Strategic Network Grant (PI: L. Chang)	$6,000,000/5 years
2008-2010	NSERC Strategic Grant (individual)	$406,120/2 years
2008-2009	NSERC Equipment Grant (individual)	$24,966/1 year
2008-2009	OCE Interact Grant (individual)	$16,300/3 months
2009	Honeywell Research Grant (individual)	$10,000/2 months
2009	CFI (PI: B. Wu)	$1,860,000/2 years
2010	Honeywell Canada (individual)	$65,000/1 year
2009-2011	NRCan Research Grant (individual)	$108,000/1.5 years
2010-2014	L Lau Chair Research Award	$50,000/5 years
2010-2011	NSERC Discovery Grant (individual)	$50,000/ 1 year
2010-2015	NSERC Smart Microgrid Strategic Network Grant (PI: H. Farhangi)	$5,000,000/5 years
2011-2013	STDC Industrial Grant (individual)	$350,000/2 years
2011-2015	NSERC Discovery(individual)	$345,000/5 years
2013-2015	NRCAN ecoEII R&D (individual)	$980,000/3 years
2013-2016	NRCAN ecoEII Demo (individual)	$500,000/3 years
2013-2015	NRCan EcoEII Demo (PI: Hatch)	$140,000/2 years
2013	NSERC Engage (individual)	$23,000/1 year
2013	OCE/Trantek (individual)	$54,000/1 year
2014-15	Hydro One (individual)	$400,000/2 years
2014	NSERC-RTI Equipment (individual)	$38,000/1 year
2015-2019	L Lau Chair Research Grant	$50,000/5 years
2015	Natural Resources Canada (individual)	$23,700/1 year
2015	NSERC Engage Grant (individual)	$25,000/1 year
2015	CFI Infrastructure Grant (PI: Prof Lo)	$1,980,000/1 year
2015-2017	Canada-France Collaboration Award	$13,200/2 years
2015-2017	NSERC CRD grant (individual)	$140,000/2 years
2015-2020	NSERC Energy Storage (NEST) Network (PI: Prof B. Venkatesh)	$8,500,000/5 years
2016-2021	NSERC Discovery (Individual)	$385,000/5 years
2017-2020	NSERC-OCE TargetGHG (individual)	$2,587,000/3years

Professional Society Membership

[1] Fellow (2003), Institute of Electrical and Electronics Engineers (IEEE)

- Member, IEEE Power Engineering Society (PES)
- Member, IEEE Power Electronics Society (PE)
- Member, IEEE Industrial Electronics Society (IE)

▪ Chair, IEEE PES General Systems Subcommittee (2006-2009)

- Chair, IEEE PES Task Force on Modeling & Analysis of Electronically Interfaced Distributed Resources (2001-2008)
- Chair, IEEE PES Working Group on System Modeling (1992-1998)
- Chair, IEEE PES Task Force on Slow Transients (1992-1998)
- Chair, IEEE PES Task Force on Benchmark Models for Simulation of FACTS and Custom-Power Devices (1998-2006)
- Member, IEEE PES Torsional Issues Working Group (1987-1994)
- Member, IEEE PES Working Group on FACTS (1990-1998)
- Member, IEEE PES Task Force on Switching Transients (1992-1998)
- Member, IEEE PES Working Group on Distributed Resources (2001-2014)
- Member, IEEE PES Working Group on VSC (1999-2014)
- Member, IEEE PES Working Group on Power Electronics Blocks (Feb 2001-2006)
- Member, IEEE PES DC & FACTS Subcommittee (1996-present)
- Member, IEEE PES Distribution Subcommittee (1998-2006)
- Member, IEEE PES Working Group on System Oscillations (1990-2008)
- Member, IEEE PES Task Force on Software Interfacing Issues (2006-present)
- Member, IEEE PES Task Force on High Frequency Network Equivalents (2006-present)
- Member, IEEE PES Task Force on Dynamic Averaged Models (2006-2013)

[2] Collective Member, Conseil International des Grands Reseaux Electiques (CIGRE) – International Conference on Large Electric Systems (2002-present)

Member, CIGRE Study Committee (SC) C6 on Distribution Systems and Dispersed Generation (2004-present)

- Member, CIGRE Working Group SC.C6.04 (2004-2009)
- Member, CIGRE Task Force SC.C6.04.02 (2004-2009)
- Member, CIGRE Working Group SC.C6.06 (2006-2009)
- Member, CIGRE Working Group SC.C6.11 (2006-2009)
- Member, CIGRE Working Group SC.C6.15 (2009-2013)
- Member, CIGRE Working Group SC.C6.22 (2010-2014)
- Member, CIGRE Working Group SC.C6.28 (2014-present)

Member, CIGRE Study Committee (SC) B4 on Power Electronics and HVDC Systems (2008-present)

- Member, CIGRE Working Group SC.B4.55 (2011-present)
- Member, CIGRE Working Group SC.B4.69 (2014-present)
- Member, CIGRE Working Group SC.B4.70 (2014-present)
- Member, CIGRE Working Group SC.A3/B4.34 (2012-present)
- Member, CIGRE Working Group SC.B3.37 (2012-present)
- Member, CIGRE Working Group SC.B4.66 (2013-present)
- Member, CIGRE Working Group SC.C4/B4.604 (2013-present)
- Member, CIGRE Working Group SC.B4/C1.65 (2012-present)

[3] Member, Professional Engineers of Ontario (1996-present)

[4] Fellow, Royal Society of Canada – Science Division (2017-present)

Editorship

[1] Editor in Chief, IEEE Transactions on Power Delivery (2008-2014)

[2] Member of the Editorial Board, IEEE Transactions on Power Delivery (2001-2014)

[3] Member of the Editorial Board, IEEE Power Engineering Letters (2006-2014)

[4] Associate Editor of the International Journal on Distributed Resources – IJDS (2009-present)
[5] Quest Editor, IEEE Transactions on Power Delivery, Special Issue on Advances in the Simulation of Power Systems (July 2014-July 2016)
[6] Quest Editor, IEEE Transactions on Power Delivery, Special Issue on Frontiers of DC Technology (September 2016-present)
[7] Member of Advisory Board, International Journal of Electrical Power & Energy Systems (September 2016-present)

International Conference Technical Committee Membership

[1] Member of "International Conference on Power System Transients – IPST", bi-annual conference, (2001-present)
[2] Steering/Technical Committee Member, Microgrids Symposium, annual event, (2005 – 2015)
[3] Technical Committee Member of "Integration of Renewable Energy and Distributed Energy Resources - IRED", bi-annual conference, (2006-present)

Invited Talks/lectures

[1] R. Iravani, "Parallelism in model, software and hardware for large systems", Invited Talk, Universite de Haute Alsace, Mulhouse, France, Dec 8, 2016.
[2] R. Iravani, "Wear and tear impact of high-depth of penetration of renewables on legacy power system apparatus", invited presentation, Independent Electrical System Operator (IESO), Mississauga, Ontario, Canada, Feb 2015.
[3] R. Iravani, "A real-time simulation environment for the analysis of large high-voltage AC-DC power systems", Booz-Allen-Hamilton Distinguished Colloquium, University of Maryland, Maryland, USA, May 2014.
[4] R. Iravani, Dynamic and control of large AC-Dc power Networks", Invited Lecture, Tshinghua University, Beijing, China, April 2014,
[5] R. Iravani, "Real-Time modeling of HVDC Grid", North China, electric Power University, Invited Lecture, Beijing China, April 2014.
[6] R. Iravani, "Wide-band equivalent model of Type-3 wind power plants", Invited Lecture, University of Guadalajara, Guadalajara, Mexico, January 2014.
[7] R. Iravani, "Dc-Segmented AC power system", distinguished Lecturer Series, University of Cardiff, Cardiff, UK, December 2013.
[8] R. Iravani, "Microgrid EMS and supervisory Control", Invited Lecture, University of Chile, Santiago, Chile, December 2013.
[9] R. Iravani, "Real-time analysis of large electrical power systems", Distinguished lecture Series, Washington State University, Pullman, Washington, USA, October 2013.
[10] R. Iravani, "Real-Time simulation of Hybrid Systems", Invited lecture, Norwegian Technical University, Trondheim, Norway, April 2013.
[11] R. Iravani, "Battery storage system for distributed generation", Invited presentation, CAmet Labs, Montreal, September 2012.
[12] R. Iravani, "Real-time analysis of large system including multiple wind power plants", Distinguished Lecture Series, Arizona State University, Tempe, Arizona, USA, October 2012.

[13] R. Iravani, "Large scale integration of renewable resources in power systems", Invited Talk, Chile Energy Conference, Santiago, Chile, May 2012.
[14] R. Iravani, "microgid as the building block of the future grid", Iowa State Distinguished Lecture Series, Ames, Iowa, November 20111.
[15] R. Iravani, "future power grid issues and trends", Invited Talk, Cairo University, Cairo, Egypt, May 2011.
[16] R. Iravani, "Virtual power plant operational strategies", Keynote Presentation, 15th international Conference on Power electronics, Novi Sad, Serbia, November 2009.
[17] R. Iravani, "State-of-the-art in HVDC control and operation", invited talk for KEPCO, Invited Talk, Seoul, South Korea, November 2009.
[18] R. Iravani, "Control and Protection Requirements for Micro-Grids", Second international Symposium on Micro-Grids, Mont-Tremblant, Quebec, Canada, June 2006
[19] R. Iravani, "On the Electromagnetic Transients simulation of Electronically-Interfaced Distributed Generation Systems", Doshisha University, Kyoto, Japan, May 2006.
[20] R. Iravani, "Transients of a Micro-Grid Including Multiple Distributed Resource Units", Meidensha Corporation Headquarters, Tokyo, Japan, May 2006.
[21] R. Iravani, "Control of Distributed Resources in a Micro-Grid System", University of Tokyo, Tokyo, Japan, December 2005.
[22] R. Iravani, "Dynamic Models for a Micro-Grid", First Symposium on Micro-Grids, University of California and Berkeley, Berkeley, U.S.A., June 2005.
[23] R. Iravani, "Role of Power Electronics in Mobile Units", Aerospace Power conference, Reno, Nevada, U.S.A., October 2004.
[24] R. Iravani, "Interfacing Real-Time Simulation Models FACTS Controller with Physical Control Platforms," 4th FACTS User's Group Meeting, New York, NY, October 2001.
[25] R. Iravani, "Digital Simulation of Static Transfer Switch; Panel Session on FACTS and Custom-Power Controllers," IEEE PES Winter Meeting 2001, Columbus, Ohio, February 2001.
[26] R. Iravani, "Real-time Digital Simulation of Power Electronic Converter Systems," Federal University of Rio de Janeiro, Rio de Janeiro, Brazil, June 2001.
[27] R. Iravani, "Real-time Digital Simulation of Power Electronic Converter Systems," Federal University of Rio de Janeiro, Rio de Janeiro, Brazil, June 2001.
[28] R. Iravani, "Low-frequency Overvoltages – Modeling & Analysis," presented at the Panel Session on "Overvoltages: Analysis and Protection," IEEE PES T&D Conference, New Orleans, April 1999.

PART B
Publications

Books, Book Chapters & International Reports:

[1] **A. Rezaei-Zare**, R. Iravani, chapter 5 of " Electromagnetic Transients in Transformers and Rotating Machines", under the title of "Ferro-resonance in Power and Instrument Transformers", 55 pages, IGI Global Publishing, 2012.
[2] **A. Mehrizi-Sani,** R. Iravani, "Next Generation Power Systems - Control and Power Management", Lambert Educational Publishing, ISBN:978-3-659-14225-3, 2012.
[3] R. Iravani, chapter 18 of "Transient Analysis of Power System", under the title of "Grid Integration of Wind Power", 24 pages, CRC Press, to appear in 2012.

[4] **M.Z. Kamh**, R. Iravani, "Active Distribution Networks", Lambert Academic Publishing, Germany, ISBN: 978-3-8465-2313-1, 2011.
[5] **A. Yazdani** and R. Iravani, "Voltage-Sourced Converters in Power Systems – Modeling, Control & Applications", Wiley-IEEE, ISBN 978-0-470-5156-4, 2010.
[6] **H. Karimi** and R. Iravani, Electronically-Interfaced Distributed Generation Units – Islanding Detection and Control", VDM Verlag, ISBN 978-3-8383-0007-8, 2009.
[7] **S. Garcia** and R. Iravani, "Hybrid Wind-Diesel Power Plants", VDM Verlag, ISBN 978-3-639-00535-6, 2008.
[8] CIGRE Working Group SC-B2-41, "Guideline to Conversion of Exisiting AC lines to DC Operation", May 2014, ISBN: 978-2-85873-279-1
[9] CIGRE Task Force SC-C6-04-02, "Benchmark Systems for Network Integration for Renewable and Distributed Energy Resources", CIGRE Report 575, April 2014, ISBN: 978-2-85873-270-8
[10] CIGRE Working Group SC-C6-15, "Electric Energy Storage Systems", CIGRE Report 458, April 2011, ISBN: 978-2-85873-147-3
[11] CIGRE Working Group SC-C6-08, "Grid Integration of Wind Genration", CIGRE Report 450, February 2011, ISBN: 978-2-85873-139-8
[12] R. Iravani, "Static Phase Shifters", Chapter 6 of "Flexible AC transmission Systems (FACTS), IEE publication, edited by Y.H. Song and A.T. Johns, December 1999, ISBN 0855296-771-3.
[13] R. Iravani as the Lead Author, "Modeling Guidelines for Low-Frequency Transients," Chapter 3 of the IEEE publication TP-133-0 "Modeling and Analysis of System Transients Using Digital Programs," 1999.
[14] R. Iravani as the Lead Author, "Modeling Guidelines for Power Electronics in Electric Power Engineering Applications," Chapter 2 of the IEEE publication TP-133-0, 1999.
[15] R. Iravani as the Lead Author, "Modeling Guidelines for Very Fast Transients in Gas Insulated Substations," Chapter 6 of the IEEE Publication TP-133-0, 1999.

Papers in Refereed Journals (last 10 years):

[1] **A. Hooshyar,** R. Iravani, "Microgrid Protection", invite paper to appear in the IEEE Proceedings
[2] **A. Hooshyar,** R. Iravani, "A solution for microgrid protection challenges" accepted for publication in the IEEE Transaction on Smart Grid.
[3] **M. Abedini, M. Davarpanah**, M.Sanaye-passad, R. Iravani, "A loss-of-life detection relay based on rotor signals estimations", accepted for IEEE Transactions on Power Systems.
[4] **M. Abedini, M. Davarpanah**, M.Sanaye-passad, R. Iravani, "A faster than real-time prediction approach for generator out-of-step protection", accepted for IEEE Trans. on Power Systems.
[5] **X. Wu**, C. Shen, R. Iravani, "A distributed, cooperative frequency and voltage control for microgrids", accepted for publication in the IEEE Transactions on Smart Grid.
[6] **A. Khalil**, R. Iravani, "Enhanced generic nonlinear and linearized models of wind power plants", accepted for publication in the IEEE Transactions on Power System.
[7] **C. Guo**, C. Zhao, R. Iravani, "Small-signal dynamics of hybrid LCC-VSC HVDC system", accepted for publication the IEEE Transactions on Power Systems.

[8] **C. Guo**, C. Zhao, R. Iravani, "Impact of phase-locked loop on small-signal dynamics of LCC HVDC station", accepted for publication in the journal of IET Gen., Trans. & Distribution.

[9] **A. Mohammed**, R. Iravani, "A dynamic coherency identification method based on frequency deviation signals", accepted for publication in IEEE Transactions on Power Delivery.

[10] **A. Mohammed**, R. Iravani, "Impact of wind power on power system dynamics – Part I: low frequency oscillatory modes", accepted for publication in the IEEE Trans. on Sustainable Energy.

[11] **A. Mohammed**, R. Iravani, "Impact of wind power on power system dynamics – Part II: Transient Stability and coherency phenomena", accepted for publication in the IEE Transactions on Sustainable Energy.

[12] **A. Rezaei-Zare, A Etemadi**, R. Iravani, "Challenges of power converter operation and control under ferroresonance conditions, accepted for publication in the IEEE Trans. on Power Delivery.

[13] **M. Ashourloo,** R. Iravani, "Enhance model and real-time Simulation architecture for modular multilevel converter", IEEE Transactions on Power Delivery.

[14] **M. Ashourloo,** R. Iravani, "A reduced-order model of full-bridge modular multilevel converter for the analysis of electromagnetic transients in power systems", accepted for publication in IET, Distri.-Trans.-Generation.

[15] **X. Wu**, C. Shen, R. Iravani, "Feasible range and optimal value of virtual impedance for droop based control of microgrids", IEEE Trans. on Smart Grid, vol. 8, no. 3, pp.1242-1251, May 2017.

[16] **H. Li**, C. Liu, G. Li, R. Iravani, "An Enhanced DC Voltage Droop-Control for VSC-HVDC Grid", IEEE Trans. on Power Delivery, PWRD-32, no.2, pp.1520-1527, March 2017.

[17] **A. Etemadi**, R. Iravani, "Supplementary mechanisms for smooth transition between control modes in microgrids", Electric Power System Research, Vol. 142, pp. 249-257, Jan 2017.

[18] **D. Hussein, M. Matar,** I. Iravani, "A wideband equivalent model of Type-3 wind power plants for EMT studies", IEEE Trans. on Power Delivery, PWRD-31, No. 5, pp.2322-2331, 2016.

[19] **F. Li**, Y. Gao, Y. Cao, R. Iravani, "Improved teager energy operator and chrip-Z transform for parameter estimation of voltage flicker", IEEE Trans. On Power Deliver, PWRD-31, no. 1, pp. 245-253, 2016.

[20] **S. Pirooz-Azad**, J Taylor, R. Iravani, "Decentralized supplementary control of multiple LCC HVDC links", IEEE Trans. on Power Systems, PWRS-31, no. 1, pp. 572-580, 2016.

[21] **M. Matar, D. Paradis**, R. Iravani, "Real-time simulation of modular multi-level converters for controller hardware-in-the-loop testing", IET Power Electronics, vol. 9, no.1, pp. 42-50, 2016.

[22] **A. Deihimi**, B. Zadeh, R. Iravani, "An interactive operation management of microgrid with multiple distributed generation using multi-objective uniform water-cycle algorithm", Energy-Elsevior, vol. 106, No. 3, pp. 482-509, 2016.

[23] E. Ebrahimi, S. Farhangi, H. Iman-Eini, **F. Badrkhani Ajaei**, R. Iravani, "Improved phase estimation method for Dynamic voltage-restorer application", IEEE Trans. on Power Delivery, TPWRD-30, No. 3, pp. 1467-1477, June 2015.

[24] **F. Badrkhani-Ajae,** R. Iravani, "A modified equivalent model of the modular multilevel converter", IEEE Trans. on Power Delivery, TPWRD-30, No. 2, pp. 666-673, April 2015.

[25] **S. Pirooz-Azad,** R. Iravani, Z. Tate, "Dynamic stability enhancement of a DC-segmented AC power system via HVDC operating point adjustment", IEEE Trans. on Power Delivery, TPWRD-30, no. 2, pp.657-665, April 2015.

[26] C. Marnay, B. Kroposki, M. Mao, H. Xu, A. Chong, S. Chong, R. Hara, T. Ise, R. Iravani, M. Albu, N. Hatziargyrious, T. Funabashi, J. Reilly, J. Driesen, G. Jimenez, X. Vallve, "The Tianjin 2014 Symposium on microgrids", Invited papers, IEEE Electrification Magazine, vol. 3, no. 1, pp. 79-85, March 2015.

[27] **A. Ramirez,** R. Iravani, "Enhanced fitting to obtain an accurate DC response of transmission lines in the analysis of electromagnetic transients ", IEEE Trans. on Power Delivery, TPWRD, Vol. 29, no 6, pp. 2614-2621, December 2014.

[28] **A. Etemdai,** E.J. Davison, R. Iravani, "A generalized decentralized robust control of islanded microgrids", IEEE Trans. on Power Systems, Vol. 29, No. 6, pp. 3102-3113, Nov 2014.

[29] CIGRE WG B2.41, "Guide for the Conversion of Existing AC lines to DC Operation", Electra, No. 275, pp. 47-51, August 2014.

[30] A. Mao, R Iravani, "A Trend-Oriented Power System Security Analysis based on Load Profile", IEEE Trans. PWRS, Vol. 29, no. 3, pp. 1279-1286, May 2014.

[31] CIGRE WG C6.04, TF C6.04.02, "Benchmark Systems for Network Integration of Renewables and Distributed Energy Resources", Electra, No. 273, pp. 84-89, April 2014.

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