

ARIZONA STATE UNIVERSITY
Ira. A. Fulton Schools of Engineering
School of Electrical, Computer and Energy Engineering
Tempe, AZ 85287-5706

Vita

Revised November 2016

I. PERSONAL DATA

Name: Vijay Vittal
Address: PO Box 875706, Department of Electrical Engineering
Arizona State University, Tempe, AZ 85287-5706
Phone: 480-965-1879

FAX: 480-727-2052
Email: vijay.vittal@asu.edu
Home: 5418 E. Hartford Ave.
Scottsdale, AZ 85254
Birthdate/Place: December 25, 1955, India
Orig. Date of Employment: January 1, 2005
Prof. Reg.:
Citizenship: U.S. Naturalized Citizen
Grad. Faculty Status: Full Member

II. EDUCATION

Ph.D.	EE	Iowa State University	1982
M.T.	EE	Indian Institute of Technology Kanpur, India	1979
B.E.	EE	B.M.S. College of Engineering Bangalore, India	1977

III. ACADEMIC EXPERIENCE

2013 – Present	ASU Foundation Professor in Power Systems Engineering
2005 – Present	Ira. A. Fulton Chair Professor School of Electrical, Computer and Energy Engineering Ira. A. Fulton Schools of Engineering Arizona State University
2005 – Present	Director, National Science Foundation IUCRC Power System Engineering Research Center
2004-2005	Anson Marston Distinguished Professor Electrical and Computer Engineering Department Iowa State University, Ames, IA
2001-2003	Associate Chair of Department and Director of Graduate Education
2000-2004	Murray and Ruth Harpole Professor

	Electrical and Computer Engineering Department Iowa State University, Ames, IA
1999-2004	Director, Electric Power Research Center
1998-2004	Site Director, National Science Foundation IUCRC Power System Engineering Research Center
1990 - 2004	Professor Electrical and Computer Engineering Department Iowa State University, Ames, IA
1986 - 1990	Associate Professor Electrical and Computer Engineering Department Iowa State University, Ames, IA
1982 - 1986	Assistant Professor Electrical and Computer Engineering Department Iowa State University, Ames, IA
1979 - 1982	Research Assistant Electrical and Computer Engineering Department Iowa State University, Ames, IA
1977 - 1979	Teaching Assistant Electrical Engineering Department Indian Institute of Technology, Kanpur, India

IV. INDUSTRIAL AND OTHER NON-ACADEMIC EXPERIENCE

2005 -	Director, Power Systems Engineering Research Center (PSERC – A NSF Supported IUCRC) – Arizona State University
1999-2004	Site Director, Power Systems Engineering Research Center (PSERC – A NSF Supported IUCRC) – Iowa State University
1993-1994	Program Director for Power Systems, National Science Foundation Division of Electrical & Communication Systems, Washington, DC

V. HONORS AND AWARDS

2013 IEEE Herman Halperin Electric Transmission and Distribution Award – IEEE Technical Field Award – “For development of power system stability assessment methods leading to the maximum utilization and increased reliability of transmission facilities.”

2009 IEEE Power and Energy Society, Working Group Recognition Award, Outstanding Technical Report – “Blackout Experience and Lessons, Best Practices for System Dynamic Performance, and the Role of New Technologies.

2007 Outstanding Alumnus Award, B.M. Sreenivasaiah College of Engineering Bangalore, India.

- 2007 IEEE Power Engineering Society, Power System Dynamic Performance Committee, Technical Committee Prize Paper Award – “Small-Disturbance angle Stability Enhancement Through Direct Load Control Part I and II, IEEE Transaction on Power Systems, Vol. 21, No. 2, May 2006, pp. 773-781 and pp. 782-790.
- 2007 Named among the 150 "Visionaries" -- individuals who built Iowa State University, from its earliest beginnings as an agricultural college, to today's university of science and technology on the occasion of ISU's sesquicentennial.
- 2006 IEEE Power Engineering Society, Power System Dynamic Performance Committee, Technical Committee Working Group Recognition Award – “Task Force on Assessing the Need to Include Higher-Order Terms for Small-Signal (Modal) Analysis.”
- 2005 IEEE Power Engineering Society, Power System Dynamic Performance Committee, Distinguished service award for distinguished and meritorious service to the Power System Dynamic Performance Committee.
- 2004 Elected to the U.S. National Academy of Engineering. Citation: “For improvements in real-time control and dynamic security assessment for electric power systems.” Election to the National Academy of Engineering is among the highest professional distinctions accorded to an engineer. Academy membership honors those who have made "important contributions to engineering theory and practice, including significant contributions to the literature of engineering theory and practice," and those who have demonstrated accomplishment in "the pioneering of new fields of engineering, making major advancements in traditional fields of engineering, or developing/implementing innovative approaches to engineering education."
- 2003 Iowa State University Foundation Award for Outstanding Achievement in Research. This award recognizes faculty members for outstanding achievement in research, scholarship, or creative activity.
- 2001 Institute of Electrical and Electronics Engineers, Power Engineering Society Technical Council Committee of the Year Award 2000-2001 – Power System Dynamic Performance Committee – Chair Vijay Vittal.
- 2000 Outstanding Power Engineering Educator Award, Power Engineering Society, Institute of Electrical and Electronics Engineers. Awarded for excellence in teaching and ability to inspire students, and leadership in electric power engineering education through publication of textbooks and writings on engineering education. Citation: “For Inspirational Leadership and Innovative Contributions to Electric Power Engineering Education, Research and Program Development.”
- 2000 Warren B. Boast Undergraduate Teaching Award. Departmental Award for Student Recognition of Outstanding Classroom Performance.
- 1997 Elected Fellow of the Institute of Electrical and Electronics Engineers. Citation:

“For contributions to the development of the transient energy function method and its application to power system dynamic security assessment, and for leadership in power engineering educations and research.”

- 1989 Young Engineering Faculty Research Award, presented by the College of Engineering, Iowa State University. The award recognizes superior, early achievements in research as evidenced by the ability to conduct original research by scholarly contributions to the literature, and by the introduction of new and improved laboratory techniques and instrumentation.
- 1988 Faculty Award of Excellence, presented annually by the NCR Corporation to recognize outstanding contributions to the Academic Education of Electrical Engineering Students.
- 1985 Presidential Young Investigator Award, received from the President of the United States in recognition of research and teaching abilities. Presidential Young Investigator (PYI) awards are among the highest honors given by the U.S. government to outstanding young scientists and engineers. Presidential Young Investigators are selected on the basis of demonstrated ability and potential for contributing to the future vitality of the Nation's scientific and engineering effort. Nominations are evaluated in a multi-level process including external peer review.

VI. ACADEMIC AREAS OF SPECIALIZATION

Teaching

At Arizona State University

1. EEE360 Energy Conversion and Transport (2006F, 2012F)
2. EEE470 Electric Power Devices (2007F, 2012F, 2014F, 2016SB)
3. EEE471 Power System Analysis (2015S, 2016S(Online))
4. EEE480 Feedback Systems (2009S, 2010F, 2011S)
5. EEE573 Electric Power Quality (2005S, 2006S)
6. EEE575 Power System Stability (2005F, 2008S, 2009F, 2011F, 2013F, 2015F)
7. EEE576 Power System Dynamics (2007S, 2008F, 2010S, 2012S, 2014S, 2016S)
8. EEE691 Electric Power Seminar (2005F, 2006S, 2006F, 2007S, 2007F, 2008S, 2008F, 2009S, 2009F, 2010S, 2010F, 2011S, 2011F, 2012S, 2012F, 2013 S, 2014F, 2014S)

At Iowa State University

1. ENGR 161 Engineering Problems with Computational Laboratory in C (1996F)
2. EE 205 Electric Circuits I (1990F)
3. EE 206 Electric Circuits II (1991S, 1995S, 1995F)
4. EE 251 Introduction to Modern Power Systems (1995F, 1996S, 1996F, 1997F)
5. EE303 Energy Systems and Power Electronics (2004F)
6. EE 456 Pow Sys Anal I (1989F, 1992F, 1994F, 1994S, 1998F, 1999F, 2000F, 2002F)
7. EE 457 Pow Sys Anal II (1990S, 1993S, 1995F, 1999S, 2000S, 2001S, 2002S, 2003S, 2004S)

8. EE 475 Design of Linear Control Systems (1993S)
9. EE 476 Cont Sys Simul (1988S, 1988F, 1989S, 1989F, 1991S, 1992F)
10. EE 553 Steady State Analysis (2001F)
11. EE 554 Power System Dynamics (1996S, 1997S, 1998S, 1999S, 2000S)
12. EE 578 Mod Cont Sys II (1989S, 1990F)
13. EE 578XR Mod Cont Sys I (1989S, 1991S)
14. EE 577 Mod Cont Sys I (1988F, 1990F)
15. EE 577XR Mod Cont Sys I (1988F)
16. EE 556 Com Tech Pow Sy An (1988S)
17. EE 594 Seminar In Electric Power (1995F, 1996S, 1996F, 1997S, 1997F, 1998S, 1998S, 1998F, 1999S, 1999F, 2000S, 2000F, 2001S, 2001F, 2002S, 2002F, 2003S, 2003F, 2004S, 2004F)
18. EE 552 Sym Co Anal Pow Sy (1987F)
19. EE 653 Special Topics in Power (2000F, 2003F)
20. EE 699 Research (1987F, 1988S, 1988F, 1989S, 1989F, 1990S, 1990F, 1991S, 1991F, 1992S, 1992F, 1993S, 1994F, 1995S, 1995F, 1996S, 1996F, 1997S, 1998F, 1999S, 1999F, 2000S, 2000F, 2001S, 2001F, 2002S, 2002F, 2003S, 2003F, 2004S, 2004F)

Research

1. Electric Power
2. Power System Dynamics and Controls
3. Nonlinear Systems
4. Computer Applications in Power
5. Integration of renewable energy resources

VII. GRANTS AND CONTRACTS

1. **Vittal, V.**, G.T. Heydt, R. Ayyanar, DOE, \$250,000, “Leveraging Industry Research to Educate a Future Electric Grid Workforce in the Westerns U.S.” February 2016 – February 2019.
2. J. Zhang, K. Hedman, **Vittal, V.** (Co-PI), and A. Scaglione, ARPA-E, \$3,000,000, “Stochastic Optimal Power Flow for Real-Time Management of Distributed Renewable Generation and Demand Response.” July 2016-June 2018.
3. **Vittal, V.** (Co-P.I.), National Science Foundation, \$1,478,907, “Resilient Cyber-Enable Electric Energy and Water Infrastructures: Modeling and Control under Extreme Mega Drought Scenarios.” July 2015 – June 2018.
4. **Vittal, V.** (Co-P.I.), Department of Energy, \$5,512,900, “The Future Grid to Enable Sustainable Energy Systems: An Initiative of the Power Systems Engineering Research Center,” March 30, 2011 – December 31, 2013.
5. Junshan Zhang and **Vittal, V.** (Co-P.I.), National Science Foundation, \$500,000, “Architecture and Distributed Management for Reliable Mega-scale Smart Grids,” September 7, 2010 – August 31, 2013.

6. G.T. Heydt, **Vittal, V.** (Co-P.I.), and R. Gorur, Department of Energy, \$2,315,000, "WECC - Resource Assessment and Interconnection-Level Transmission Analysis and Planning – FOA68," Jan 1, 2010 – Dec 31, 2012.
7. **Vittal, V.** (Co-P.I.), G.T. Heydt, and R. Ayyanar, Department of Energy, \$400,000, "Power System Operation and Planning for Enhanced Wind Penetration," 12/01/2009 – 11/30/2011.
8. **Vittal, V.** (Co-P.I.), R. Ayyanar, and G.T. Heydt, Department of Energy, \$965,000, "High Penetration of Photovoltaic Generation Study –Flagstaff Community Power," 12/01/2009 – 11/30/2011.
9. **Vittal, V.** (Co-P.I.) Science Foundation of Arizona, \$54,063, "Solar market and analysis tool," June 30, 2009-June 29, 2010.
10. **Vittal, V.** (Co-P.I.) Battle Labs, \$70,000, "Integration of renewable resources," April 20, 2009 – December 31, 2009.
11. **Vittal, V.** (Co-P.I.) DOE – NETL, \$61,519, "Adaptive Islanding," January 1, 2009 – December 31, 2010.
12. **Vittal, V.** (Co-P.I.), PSERC, \$150,000, "Next generation on-line dynamic security assessment," July 1, 2009 – June 30, 2011.
13. **Vittal, V.** and Ayyanar, R., NSF, \$ 239,999, "Control strategies to mitigate the impact of reduced inertia of variable frequency wind generators on the transient stability of power systems," July 1, 2007 - June 30, 2010.
14. **Vittal, V.** (Co-P.I.), PSERC, \$95,000, "Development and Evaluation of System Restoration Strategies from a Blackout," June 1, 2007 – May 31, 2009.
15. **Vittal, V.** (Co-P.I.), PSERC, \$95,000, "Impact of Increased DFIG Wind Penetration on Power System Reliability and Consequent Market Adjustments," June 1, 2007 – May 31, 2009.
16. **Vittal, V.** (Co-P.I.), PSERC, \$85,000, "Optimal allocation of Static and Dynamic VAR Reserves," June 1, 2005 – May 31, 2007.
17. **Vittal, V.** (Co-P.I.), PSERC, \$80,000, "A Tool for On Line Stability Determination and Control for Coordinated Operation between Regional Entities using PMUs," June 1, 2005 – May 31, 2007.
18. **Vittal, V.** (P.I.), NSF, \$20,000, "Workshop on Understanding and Preventing Cascading Failures in Power Systems," September 15, 2005 – August 31, 2006.
19. **Vittal, V.** (P.I.), NSF, \$48,000, "Research Experience with Alternate Energy with Special Attention to Native American Communities," Sep 1, 2005 – August 31-2007.
20. **Vittal, V.** (P.I.), A. K. Somani, M. Govindarasu, M. Salapaka, and Z. Wang, National Science Foundation, \$400,000, "SST-Sensor Network Design for a Secure National Electric Energy Infrastructure," September 1, 2004 – August 31, 2007
21. **Vittal, V.** (P.I.), CERTS, \$100,000, "An Agent Based Self Healing Scheme for Large Power Systems Using Adaptive Islanding," Jan 1, 2003 – December 31, 2005.
22. **Vittal, V.** (P.I.), National Science Foundation, \$78,270, "SGER: Robust Gain Scheduled Control Design in Power Systems," August 15, 2003 – July 15, 2004.
23. **Vittal, V.** (P.I.), PSERC, \$90,000, "Enhanced Reliability of Interconnected Power Systems and Prevention of Cascading Outage," June 1, 2002 – May 30, 2005.
24. **Vittal, V.** (P.I.), PSERC, \$90,000, "Security Enhancement through Direct Non-disruptive Load Control," June 1, 2002 – May 30, 2005.
25. Khammash, M. H. (P.I.), **V. Vittal** (Co-PI), National Science Foundation, \$49,000, "International Workshop on Control and Power Systems," September 1, 2000 - February 28, 2001.

26. **Vittal, V. (P.I.)**, M. Govindarasu (Co-PI), National Science Foundation \$80,000, "Collaborative Research: Damage Assessment, Control, and Restoration of the Electric Power Grid Following Catastrophic Disturbances," October 1, 2000 - September 30, 2001.
27. Khammash, M. H. (P.I.), **V. Vittal (Co-PI)**, PSERC, \$60,000, "Robust Control of Large Scale Power Systems," May 1, 2000 - April 30, 2001.
28. **Vittal, V. (P.I.)**, National Science Foundation, \$237,500, "Industry /University Cooperative Research Center for Power System," September 1, 1999 - August 30, 2004.
29. **Vittal, V. (P.I.)**, V. Ajjarapu, M.H. Khammash, W. Kliemann, J. D. McCalley, G. B. Sheblé, L. Tesfatsian, S. S. Venkata (Co-PIs) Electric Power Research Institute and Department of Defense, \$1,481,234, "Innovative Technologies for Defense Against Catastrophic Failures of Complex, Interactive Power Networks," November 1, 1999,- October 31, 2004.
30. McCalley, J. (PI), **V. Vittal**, Electric Power Research Institute (EPRI), \$790,000 "Security Mapping and Reliability Index Evaluation," April, 1999 - March 31, 2001. ISU is the main contractor, and Dr. McCalley is the project manager. Subcontractors are the Laurits R. Christian Associates Company (\$400,000) and Virginia Tech (\$80,000).
31. Khammash, M. H. (P.I.), **V. Vittal (Co-PI)**, National Science Foundation, \$237,681, "Robust Control of Large Scale Power Systems," September 1, 1998 -August 30, 2001.
32. **Vittal, V. (P.I.)**, M. H. Khammash (Co-PI), Electric Power Research Institute/MidAmerican Energy, \$100,000, "Robust Analysis and Design of Controls in Power Systems," August 1, 1998-July 31, 2000.
33. McCalley, J. D. (PI), **V. Vittal (Co-PI)**, G. B. Sheblé (Co-PI), V. Ajjarapu (Co-PI), S. S. Venkata (Co-PI), National Science Foundation, and Electric Power Research Institute, \$162,248, "Module Based Multimedia Courseware Development for Power System Education," June 1, 1997 - May 31, 2000.
34. **Vittal, V. (PI)** and M. H. Khammash (Co-PI), Electric Power Research Institute, \$182,881, "Robust Analysis and Design of Controls in Power Systems," March 1, 1996 - December 31, 1997.
35. McCalley, J. D. (PI) and **V. Vittal (Co-PI)**, Electric Power Research Institute, \$140,313, "Development of a Risk-Based Security Assessment Framework," September 1, 1995 - September 1, 1997.
36. Fouad, A. A. (PI), **V. Vittal (Co-PI)**, and W. Kliemann (Co-PI), National Science Foundation/Electric Power Research Institute, \$199,998 "Nonlinear Power System Behavior Using Normal Forms," Extension of Linear System Analysis Via Higher Order Correction, December 1, 1993 - November 30, 1995.
37. **Vittal, V.**, National Science Foundation, \$107,613 IPA Assignment, August 1993 - July 1994.
38. **Vittal, V. (PI)** and M. H. Khammash (Co-PI), National Science Foundation, \$136,848, "A Novel Approach to Robust Control Design and Analysis of Power Systems," September 1992 - December 1994.
39. **Vittal, V. (PI)** and M. H. Khammash (Co-PI), EPRC, \$23,400, "Robust Design of Controls," January 1992 - December 1992.
40. **Vittal, V.**, EMPROS/Electric Power Research Institute, \$233,840 "Analytical Methods for Contingency Selection and Ranking for Dynamic, Security Analysis," October 1991 - June 1993.
41. Fouad, A. A. (PI), **V. Vittal (Co-PI)**, and W. Kliemann (Co-PI), National Science Foundation/Electric Power Research Institute, \$176,085, "Analysis of Stressed Interconnected Power Networks," October 1991 - June 1993.

42. **Vittal, V.**, EPRC Research Grant, \$16,200, "Robust Design and Performance of Controls in Power Systems," January 91 - December 91.
43. **Vittal, V.**, National Science Foundation SGER Research Grant, \$40,000, "A Framework to Enhance Power System Operation Closer to Security Limits," March 90 - November 91.
44. **Vittal, V.**, National Science Foundation Expedited Award for Novel Research, \$30,000, August 1988 - December 1990.
45. **Vittal, V.**, National Science Foundation Presidential Young Investigator Award, \$500,000, June 1985 - June 1990.
46. Fouad, A. A. (PI) and **V. Vittal** (Co-PI), Electric Power Research Institute, \$284,000, "Extending the Application of Direct Transient Stability Analysis," March 1985 - March 31, 1989.
47. Fouad, A. A. (PI) and **V. Vittal** (Co-PI), Electric Power Research Institute, \$82,000, "Output Analysis," December 1982 - December 1985.
48. Fouad, A. A. (PI) and **V. Vittal** (Co-PI), Florida Power & Light Co., \$23,800, "Direct Stability Analysis in Loss of Generation Disturbance," September 1983 - December 1984.
49. Fouad, A. A. (PI) and **V. Vittal** (Co-PI), Ontario Hydro/Electric Power Research Institute, \$435,000, "Demonstration of Large Scale Direct Analysis of Power System," March 1983 - December 1985.

VIII. TECHNICAL PUBLICATIONS

Refereed Journals

SCI - Science Citation Index Citations - Total Citations 5052

Ph.D. Dissertation - 6 Citations

1. Werho, T., **V. Vittal**, S. Kolluri, and S.M. Wong, "Power System Connectivity Monitoring Using a Graph Theory Network Flow Algorithm," *IEEE Transactions on Power Systems*, Vol. 31, No. 6, pp. 4945-4952, November 2016.
2. Li, Q., R. Ayyanar, **V. Vittal**, "Convex Optimization for DES Planning and Operation Radial Distribution Systems with High Penetration of Photovoltaic Resources," *IEEE Transactions on Sustainable Energy*, Vol. 7, No. 3, pp. 985-995, July 2016.
3. Huang, Q., and **V. Vittal**, "Application of Electromagnetic Transient-Transient Stability Hybrid Simulation to FIDVR Study," *IEEE Transactions on Power Systems*, Vol. 31, No. 4, pp. 2634-22646, July 2016.
4. Al-Abdullah, Y., A. Salloum, K.W. Hedman, **V. Vittal**, "Analyzing the Impacts of Constraint Relaxation Practices in Electric Energy Markets," *IEEE Transactions on Power Systems*, Vol. 31, No. 4, pp. 2566-2577, July 2016.
5. Mitra, P., and **V. Vittal**, "A Systematic Approach to $n-1$ Analysis for Power System Security Assessment," *IEEE Power and Energy Technology Systems Journal*, Vol. 3, No. 2, pp. 71-80, June 2016.
6. Yang, L., M. He, **V. Vittal**, and J. Zhang, "Stochastic Optimization based Economic Dispatch and Interruptible Load Management with Increased Wind Penetration," *IEEE Transactions on Smart Grid*, Vol. 7, No.2, pp. 730-739, March 2016.

7. Werho, T., **V. Vittal**, S. Kolluri, and S.M. Wong, "A Potential Island Formation Identification Scheme Supported by PMU Measurements," *IEEE Transactions on Power Systems*, Vol. 31, No. 1, pp. 423-431, January 2016.
8. Rahmann, C., **V. Vittal**, J. Ascuí, and J. Hass, "Mitigation Control against Partial Shading Effects in Large-scale PV Power Plant," *IEEE Transactions on Sustainable Energy*, Vol. 7, No. 1, pp. 173-180, January 2016.
9. Nguyen, H., **V. Vittal**, "Impact of high WPPs penetration on Vietnam Power System," To appear in the *ECTI Transactions on Computer Engineering, Computer and Information Technology*, Vol. 9, No. 2, pp. 101-108, November 2015.
10. Murugesan, V., Y. Chakhchoukh, V. Vittal, G.T. Heydt, N. Logic, and S. Sturgill, "Error Detection and Error Correction for PMU Data as Applied to State Estimators," *IEEE Power and Energy Technology Systems Journal*, Vol. 2, pp. 1-9, 2015.
11. Eftekharij, S., G.T. Heydt, and **V. Vittal**, "Optimal Generation Dispatch with High Penetration of Photovoltaic Generation," *IEEE Transactions on Sustainable Energy*, Vol. 6, No. 3, pp. 1013-1020, July 2015.
12. Yang, L., M. He, J. Zhang, and **V. Vittal**, "Support Vector Machine Enhanced Markov Model for Short-term Wind Power Forecast," *IEEE Transactions on Sustainable Energy*, Vol. 6, No.3, pp. 791-799, July 2015. (SCI 2)
13. Ganger, D., J. Zhang, **V. Vittal**, "Statistical Characterization of Wind Power Ramps Via Extreme Value Analysis," *IEEE Transactions on Power Systems*, Vol. 29, No. 6, pp. 3118-3119, November, 2014.
14. Quintero, J., **V. Vittal**, G.T. Heydt, H. Zhang, "The Impact of Increased Penetration of Converter Control Based Generators on Power System Modes of Oscillation," *IEEE Transactions on Power Systems*, Vol. 29, No. 5, pp.2248-2256, September, 2014. (SCI 4)
15. Zhang, S., **V. Vittal**, "Wide-Area Control Resiliency Using Redundant Communication Paths," *IEEE Trans. on Power Systems*, Vol. 29, No. 5, pp.2189-2199, September, 2014. (SCI 5)
16. Quintero, J., H. Zhang, Y. Chakhchoukh, **V. Vittal**, G.T. Heydt, "Next Generation Transmission Planning Framework: Model, Tools, and Educational Opportunities," *IEEE Trans. on Power Systems*, Vol. 29, No. 4, pp.1911-1918, July, 2014. (SCI 2)
17. He, M., L. Yang, J. Zhang, and **V. Vittal**, "A Spatio-temporal Analysis Approach for Short-term Forecast of Wind Generation," *IEEE Trans. on Power Systems*, Vol. 29, No. 4, pp.1611-1622, July, 2014. (SCI 10)
18. Vittal, V., "Foreword: Special Section on Stability and Control of Electric Energy Systems with an Increasing Level of Non-Dispatchable Generating Sources," *IEEE Trans. on Power Systems*, Vol. 29, No. 3, pp.1445, May, 2014.
19. Chakhchoukh, Y., **V. Vittal**, G.T. Heydt, "PMU Based State Estimation by Integrating Correlation," *IEEE Transactions on Power Systems*, Vol. 29, No.2, pp. 617-626, March 2014. (SCI 7)
20. Fan, M., **V. Vittal**, G.T. Heydt, R. Ayyanar, "Preprocessing Uncertain Photovoltaic Data," *IEEE Transactions on Sustainable Energy*, Vol. 5, No. 1, pp. 351-352, January 2014. (SCI 1)
21. Liu, Y., **V. Vittal**, J. Undrill, J. H. Eto, "Transient Model of Air-Conditioner Compressor Single Phase Induction Motor," *IEEE Transactions on Power Systems*, Vol. 28, No.4, pp. 4528-4536, November, 2013. (SCI 4)

22. Zhang, S., **V. Vittal**, "Design of Wide-Area Power System Damping Controllers Resilient to Communication Failures," *IEEE Transactions on Power Systems*, Vol. 28, No.4, pp. 4292-4300, November, 2013. (SCI 15)
23. He, M., J. Zhang, **V. Vittal**, "Robust Online Dynamic Security Assessment Using Adaptive Ensemble Decision-Tree Learning," *IEEE Transactions on Power Systems*, Vol. 28, No.4, pp. 4089-4098, November, 2013. (SCI 8)
24. Paramasivam, M., A. Salloum, V. Ajjarapu, **V. Vittal**, N. Bhatt, S. Liu, "Dynamic Optimization based Reactive Power Planning to Mitigate Slow Voltage Recovery and Short Term Voltage Instability," *IEEE Transactions on Power Systems*, Vol. 28, No. 4., pp. 3865-3873, November 2013. (SCI 12)
25. Eftekharnajad, S., **V. Vittal**, G.T. Heydt, B. Keel, J. Loehr, "Small Signal Stability Assessment of Power Systems with Increased Penetration of Photovoltaic Generation: A Case Study," *IEEE Transactions on Sustainable Energy*, Vol. 4, No. 4, pp. 960-967, October 2013. (SCI 15)
26. Zhang, H., G.T. Heydt, **V. Vittal**, J. Quintero, "An Improved Network Model for Transmission Expansion Planning Considering Reactive Power and Network Losses," *IEEE Transactions on Power Systems*, Vol. 28, No. 3, pp. 3471-3479, August 2013. (SCI 14)
27. Hou, G., **V. Vittal**, "Determination of Transient Stability Constrained Interface Real Power Flow Limit Using Trajectory Sensitivity Approach," *IEEE Transactions on Power Systems*, Vol. 28, No.3, pp.2156-2163, August 2013. (SCI 2)
28. Eftekharnajad, S., **V. Vittal**, G.T. Heydt, B. Keel, J. Loehr, "Impact of Increased Penetration of Photovoltaic Generation on Power Systems," *IEEE Transactions on Power Systems*, Vol. 28, No. 2, pp. 893-901, May 2013. (SCI 52)
29. Zhang, Q., Y. Chakhchoukh, **V. Vittal**, G.T. Heydt, N. Logic, S. Sturgill, "Buffer Length Optimization for PMU Measurements Integrated into State Estimation," *IEEE Transactions on Power Systems*, Vol. 28, No. 2, pp. 1657-1665, May 2013. (SCI 7)
30. Fan, M., **V. Vittal**, G.T. Heydt, R. Ayyanar, "Probabilistic Power Flow Analysis with Generation Dispatch Including Photovoltaic Resources," *IEEE Transactions on Power Systems*, Vol. 28, No. 2, pp. 1797-1805, May 2013. (SCI 13)
31. He, M., **V. Vittal**, J. Zhang, "On-line Dynamic Security Assessment with Missing PMU Measurements: A Data Mining Approach," *IEEE Transactions on Power Systems*, Vol. 28, No. 2, pp. 1969-1977, May 2013. (SCI 10)
32. Fan, M., **V. Vittal**, G.T. Heydt, R. Ayyanar, "Probabilistic Power Flow Studies for Transmission Systems with Photovoltaic Generation Using Cumulants," *IEEE Transactions on Power Systems*, Vol. 27, No. 4, pp. 2251-2261, November 2012. (SCI 30)
33. Hou, G., **V. Vittal**, "Trajectory Sensitivity Based Preventive Control of Voltage Instability Considering Load Uncertainties," *IEEE Transactions on Power Systems*, Vol. 27, No.4, pp. 2280-2288, November 2012. (SCI 3)
34. Ma, F., **V. Vittal**, "A Hybrid Dynamic Equivalent Using ANN-based Boundary Matching Technique," *IEEE Transactions on Power Systems*, Vol. 27, No. 3, pp. 1494-1502, August 2012. (SCI 2)
35. Kezunovic, M., **V. Vittal**, S. Meliopoulos and T. Mount, "The Big Picture," *IEEE Power and Energy Magazine*, Vol. 10, No.4, pp. 22-34, July/August 2012. (SCI 13)
36. Heydt, G.T., R. Ayyanar, K.W. Hedman and **V. Vittal**, "Electric Power and Energy Engineering: The First Century, *Proceedings of the IEEE*, 100th Anniversary Issue, pp. 1315-1328, May 13th, 2012. (SCI 7)

37. Zhang, H., **V. Vittal**, G.T. Heydt, J. Quintero, "A Mixed-Integer Linear Programming Approach for Multi-Stage Security-Constrained Transmission Expansion Planning," *IEEE Transactions on Power Systems*, Vol. 27, No. 2, pp. 1125-1133, May 2012. (SCI 38)
38. Hou, G., **V. Vittal**, "Cluster Computing Based Trajectory Sensitivity Analysis Application to the WECC System," *IEEE Transactions on Power Systems*, Vol. 27, No.1, pp. 502-509, February 2012. (SCI 8)
39. Ma, F., **V. Vittal**, "Right-Sized Power System Dynamic Equivalents for Power System Operation," *IEEE Transactions on Power Systems*, Vol. 26, No.4, pp.1998-2005, November 2011. (SCI 9)
40. Zhang, Q., **V. Vittal**, G.T. Heydt, N. Logic, S. Sturgill, "The Integrated Calibration of Synchronized Phasor Measurement Data in Power Transmission Systems," *IEEE Transactions on Power Delivery*, Vol. 26, No.4, pp.2573-2581, October 2011. (SCI 4)
41. Heydt, G.T., **V. Vittal**, S. Malhara, Y.V. Makarov, N. Zhou, P.V. Etingov, "The Characterization and Impact of Extreme Forecast Errors on Power Systems," *Electric Power Components and Systems*, Vol. 39, Issue 15, pp. 1686-1700, 2011. (SCI 1)
42. Wang, C., **V. Vittal**, K. Sun, "OBDD-Based Sectionalizing Strategies for Parallel Power System Restoration," *IEEE Transactions on Power Systems*, Vol. 26, No. 3, pp. 1426-1433, August 2011. (SCI 11)
43. Xu, G., **V. Vittal**, A. Meklin, J.E. Thalmann, "Controlled Islanding Demonstrations on the WECC System," *IEEE Transactions on Power Systems*, Vol. 26, No. 1, pp. 334-343, February 2011. (SCI 11)
44. Gautam, D., L. Goel, R. Ayyanar, **V. Vittal**, T. Harbour, "Control Strategy to Mitigate the Impact of Reduced Inertia due to Doubly Fed Induction Generators on Large Power Systems," *IEEE Transactions on Power Systems*, Vol. 26, No. 1. pp. 214-224, February 2011. (SCI 71)
45. Wang, C., **V. Vittal**, V. S. Kolluri, and S. Mandal, "PTDF-Based Automatic Restoration Path Selection," *IEEE Transactions on Power Systems*, Vol. 25, No. 3, pp. 1686 - 1695, August 2010. (SCI 3)
46. Genc, I., R. Diao, **V. Vittal**, S. Kolluri, and S. Mandal, "Decision Tree-Based Preventive and Corrective Control Applications for Dynamic Security Enhancement in Power Systems," *IEEE Transactions on Power Systems*, Vol. 25, No. 3, pp. 1611 - 1619, August 2010. (SCI 26)
47. Malhara, S., **V. Vittal**, "Mechanical State Estimation of Overhead Transmission Lines Using Tilt Sensors," *IEEE Transactions on Power Systems*, Vol. 25, No. 3, pp. 1282 - 1290, August 2010. (SCI 2)
48. Munukutla, K., **V. Vittal**, G.T. Heydt, D. Chipman, and B. Keel, "A Practical Evaluation of Surge Arrester Placement for Transmission Line Lightning Protection," *IEEE Transaction on Power Delivery*, Vol. 25, No. 3, pp. 1742-1748, July 2010. (SCI 7)
49. Xu, G., **V. Vittal**, "Slow Coherency based Cutset Determination Algorithm for Large Power Systems," *IEEE Transactions on Power Systems*, Vol. 25, No. 2, pp. 877-884, May 2010. (SCI 35)
50. Diao, R., **V. Vittal**, and N. Logic, "Design of a Real-time Security Assessment Tool for Situational Awareness Enhancement in Modern Power Systems," *IEEE Transactions on Power Systems*, Vol. 25, No. 2, pp.957-965, May 2010. (SCI 21)
51. **V. Vittal**, "The Impact of Renewable Resources on the Performance and Reliability of the Electricity Grid," *The Bridge*, National Academy of Engineering, Vol. 40, No. 1., pp. 5-12, Spring 2010. (SCI 8)

52. Sapkota, B., **V. Vittal**, "Dynamic VAR Planning in a Large Power System Using Trajectory Sensitivities," *IEEE Transactions on Power Systems* Vol. 25, No. 1, pp. 461-469, February 2010. (SCI 22)
53. Messina, A.R., **V. Vittal**, G.T. Heydt, T.J. Browne, "Nonstationary Approaches to Trend Identification and Denoising of Measured Power System Oscillations," *IEEE Transactions on Power Systems*, Vol. 24, No. 4, pp. 1798-1807, November 2009. (SCI 22)
54. Sen, A., P. Ghosh, **V. Vittal**, B. Yang, "A New Min-Cut Problem with Application to Electric Power Network Partitioning," *European Transactions on Electrical Power*, Vol. 19, No. 6, pp. 778-797, September 2009. (SCI 7)
55. Gautam, D., **V. Vittal**, T. Harbour, "Impact of Increased Penetration of DFIG based Wind Turbine Generators on Transient and Small Signal Stability of Power Systems," *IEEE Transactions on Power Systems*, Vol. 24, No. 3, pp.1426-1434, August 2009. (SCI 125)
56. Diao, R., K. Sun, **V. Vittal**, R.J. O'Keefe, M.R. Richardson, N. Bhatt, D. Stradford, and S.K. Sarawagi, "Decision Tree-Based Online Voltage Security Assessment Using PMU Measurements," *IEEE Transactions on Power Systems*, Vol. 24, No. 2, pp. 832-839, May 2009. (SCI 54)
57. Jiang, W., **V. Vittal**, G. T. Heydt, "Diakoptic State Estimation Using Phasor Measurement Units," *IEEE Transactions on Power Systems*, Vol. 23, No. 4, pp.1580-1589, November 2008. (SCI 24)
58. Ramanathan, B., **V. Vittal**, "A Framework for Evaluation of Advanced Direct Load Control with Minimum Disruption," *IEEE Transactions on Power Systems*, Vol. 23, No. 4, pp. 1681-1688, November 2008. (SCI 83)
59. Browne, T.J. **V. Vittal**, G.T. Heydt, A.R. Messina, "A Comparative Assessment of Two Techniques for Modal Identification from Power System Measurements," *IEEE Transactions on Power Systems*, Vol. 23, No.3, pp.1408-1415, August 2008. (SCI 23)
60. Ramachandran, P., **V. Vittal**, and G. T. Heydt, "Mechanical State Estimation for Overhead Transmission Lines with Level Spans," *IEEE Transactions on Power Systems*, Vol. 23, No. 3, pp. 908-915, August 2008. (SCI 8)
61. Rice, M.J., G. T. Heydt, W. Jiang, **V. Vittal**, "Design of state estimator measurements based on condition indicators," *Journal of Electric Power Components and Systems*, Vol. 36, No. 7, pp. 665 – 679, July 2008. (SCI 4)
62. Stahlhut, J.W., T.J., Browne, G.T. Heydt, **V. Vittal**, "Latency Viewed as a Stochastic Process and its Impact on Wide Area Power System Control Signals," *IEEE Transactions on Power Systems*, Vol. 23, No. 1, pp. 84-91, May 2008. (SCI 64)
63. Martinez, I., A.R. Messina, and **V. Vittal**, "Normal Form Analysis of Complex System Models: A Structure-Preserving Approach," *IEEE Transactions on Power Systems*, Vol. 22, No. 4, pp.1908-1915, November 2007. (SCI 4)
64. Sun, K., S. Likhate, **V. Vittal**, V. S. Kolluri, and S. Mandal, "An Online Dynamic Security Assessment Scheme using Phasor Measurements and Decision Trees," *IEEE Transactions on Power Systems*, Vol. 22, No. 4, pp.1935-1943, November 2007. (SCI 77)
65. Jiang, W., **V. Vittal**, G.T. Heydt, "A Distributed State Estimator Utilizing Synchronized Phasor Measurements," *IEEE Transactions on Power Systems*, Vol. 22, No. 2, pp. 563-571, May 2007. (SCI 68)

66. Messina, A.R., **V. Vittal**, "Extraction of Dynamic Patterns From Wide-Area Measurements Using Empirical Orthogonal Function, *IEEE Transactions on Power Systems*, Vol. 22, No. 2, pp. 682-692, May 2007. (SCI 35)
67. Leon, R. A., **V. Vittal**, G. Manimaran, "Application of Sensor Network for Secure National Energy Infrastructure," *IEEE Transactions on Power Delivery*, Vol. 22, No. 2, pp.1021-1028, April 2007. (SCI 46)
68. Liu, S., A.R. Messina, **V. Vittal**, "A Normal Form Analysis Approach to Siting PSSs and Assessing Power System Nonlinear Behavior," *IEEE Transaction on Power Systems*, Vol. 21, No. 4, pp. 1755-1762, November 2006. (SCI 14)
69. Messina, A.R., **V. Vittal**, D. Ruiz-Vega, and G. Enríquez-Harper "Interpretation and Visualization of Wide-Area PMU Measurements using Hilbert Analysis," *IEEE Transactions on Power Systems*, Vol. 21, No. 4, pp. 1763-1771, November 2006. (SCI 44)
70. Senroy, N., G.T. Heydt, **V. Vittal**, "Decision Tree Assisted Controlled Islanding," *IEEE Transactions on Power Systems*, Vol. 21, No. 4, pp. 1790-1797, November 2006. (SCI 51)
71. Shao, W., **V. Vittal**, "LP-based OPF for Corrective FACTS Control to Relieve Overloads and Voltage Violations," *IEEE Transactions on Power Systems*, Vol. 21, No. 4, pp. 1832-1839, November 2006. (SCI 54)
72. Yang, B., **V. Vittal**, G.T. Heydt, "Slow Coherency Based Controlled Islanding – A Demonstration of the Approach on the August 14, 2003 Blackout Scenario," *IEEE Transaction on Power Systems*, Vol. 21, No. 4, pp. 1840-1847, November 2006. (SCI 51)
73. Messina, A.R., **V. Vittal**, "Nonlinear, Non-Stationary Analysis of Interarea Oscillations via Hilbert Spectral Analysis," *IEEE Transactions on Power Systems*, Vol. 21, No. 3, pp.1234-1241, August 2006. (SCI 90)
74. Liu, Q., **V. Vittal**, and N. Elia, "LPV Supplementary Damping Controller Design for a Thyristor Controlled Series Capacitor (TCSC) Device," *IEEE Transactions on Power Systems*, Vol. 21, No. 3, pp.1242-1249, August 2006. (SCI 14)
75. Liu, Q., **V. Vittal**, and N. Elia, "Expansion of System Operating Range by an Interpolated LPV FACTS Controller Using Multiple Lyapunov Functions," *IEEE Transactions on Power Systems*, Vol. 21, No. 3, pp.1311-1320, August 2006. (SCI 8)
76. Ramanathan, B., **V. Vittal**, "Small-disturbance Angle Stability Enhancement through Direct Load Control: *Part I – Framework Development*," *IEEE Transactions on Power Systems*, Vol. 21, No. 2, pp.773-781, May 2006. (SCI 8)
77. Ramanathan, B., **V. Vittal**, "Small-disturbance Angle Stability Enhancement through Direct Load Control: *Part II – Numerical Simulations and Results*," *IEEE Transactions on Power Systems*, Vol. 21, No. 2, pp.782-790, May 2006. (SCI 2)
78. Sanchez-Gasca, J., **V. Vittal**, M.J. Gibbard, A.R. Messina, D.J. Vowles, S. Liu, U.D. Annakagge, "Inclusion of Higher Order Terms for Small Signal (Modal) Analysis," *IEEE Transactions on Power Systems*, Vol. 20, No. 4, pp. 1886-1904, November 2005. (SCI 33)
79. Shao, W., **V. Vittal**, "Corrective Switching Algorithm for Relieving Overloads and Voltage Violations," *IEEE Transactions on Power Systems*, Vol. 20, No. 4, pp. 1877-1885, November 2005. (SCI 58)
80. Andersson, G., P., Donalek, R., Farmer, N., Hatziargyriou, I., Kamwa, P., Kundur, N., Martins, J., Paserba, P., Pourbeik, J., Sanchez-Gasca, R., Schulz, A., Stankovic, C., Taylor, **V. Vittal**, "Causes of the 2003 Major Grid Blackouts in North America and Europe, and Recommended

- Means to Improve System Dynamic Performance," *IEEE Transactions on Power Systems*, Vol. 20, No. 4, pp. 1922-1928, November 2005. (SCI 251)
81. Kyriakides, E., Gerald T. Heydt, **V. Vittal**, "On-Line parameter estimation of round rotor synchronous generators including magnetic saturation," *IEEE Transactions on Energy Conversion*, Vol. 20, No. 3, September 2005, pp. 529 – 537. (SCI 29)
 82. Liu, S., A.R. Messina, **V. Vittal**, "Assessing Placement of Controllers and Nonlinear Behavior using Normal Form Analysis," *IEEE Transaction on Power Systems*, Vol. 20, No. 3, pp.1486-1495, August 2005. (SCI 23)
 83. Wang, X. , **V. Vittal**, G.T. Heydt, " Tracing Generator Coherency Indices Using the Continuation Method: A Novel Approach," *IEEE Transactions on Power Systems*, Vol. 20, No. 3, pp 1510-1518, August 2005. (SCI 15)
 84. Messina, A.R., and **V. Vittal**, "Assessment of nonlinear interaction between nonlinearly coupled modes using higher-order spectra," *IEEE Transactions on Power Systems*, Vol. 20, No. 1, pp.375-383, February 2005. (SCI 19)
 85. Qiu, W., **V. Vittal**, and M.H. Khammash, "Decentralized Power System Stabilizer Design Using Linear Parameter Varying Approach," *IEEE Transactions on Power Systems*, Vol. 19, No. 4, pp. 1951-1960, November 2004. (SCI 40)
 86. Kyriakides, E., G.T. Heydt, **V. Vittal**, "On-line Estimation of Synchronous Generator Parameters Using a Damper Current Observer and a Graphic User Interface," *IEEE Transactions on Energy Conversion*, Vol. 19, No. 3, pp. 499-507, September 2004. (SCI 23)
 87. Kundur, P., J. Paserba, V. Ajarapu, G. Andersson, A. Bose, C. Canizares, N. Hatziargyriou, D. Hill, A. Stankovic, C. Taylor, T. Van Cutsem, **V. Vittal**, "Definition and Classification of Power System Stability, IEEE/CIGRE Joint Task Force on Stability Terms and Definitions Report," *IEEE Transactions on Power Systems*, Vol. 19, No. 3, pp.1387-1401, August 2004. (SCI 570)
 88. Sauer, P., G.T. Heydt, **V. Vittal**, Guest Editorial – Special Section on Power Engineering Education, *IEEE Transactions on Power Systems*, Vol. 19, no. 1, pp 4, February 2004. (SCI 5)
 89. Sauer, P., G.T. Heydt, **V. Vittal**, "The State of Electric Power Engineering Education," *IEEE Transactions on Power Systems*, Vol. 19, no. 1, pp 5-8, February 2004. (SCI 8)
 90. You, H., **V. Vittal**, X. Wang, "Slow Coherency Based Islanding," *IEEE Transactions on Power Systems*, Vol. 19, no. 1, pp 483-491, February 2004. (SCI 104)
 91. Ni, M., J. McCalley, **V. Vittal**, S. Greene, C. Ten, V. Gangula, and T. Tayyib, "Software Implementation of on-line risk-based security assessment," *IEEE Transactions on Power Systems*, Vol. 18, no. 3, pp.1165-1172, August 2003. (SCI 40)
 92. Ajarapu, V., G. Andersson, A. Bose, C. Canizares, N. Hatziargyriou, D. Hill, P. Kundur, J. Paserba, A. Stankovic, C. Taylor, T. Van Cutsem, **V. Vittal**, "Definitions and Classification of Power System Stability," IEEE/CIGRE Joint Task Force on Stability Terms and Definitions, *Electra*, No. 208, pp. 75-79, June 2003.
 93. Zhu, C., M. H. Khammash, **V. Vittal**, W. Qiu, "Robust Power System Stabilizer Design Using H_{∞} Loop Shaping Approach," *IEEE Trans. Power Systems*, Vol. 18, no. 2, pp.810-818, May 2003. (SCI 30)
 94. You, H., **V. Vittal**, and Z. Yang, "Self-healing in power systems: an approach using islanding and rate of frequency decline based load shedding," *IEEE Trans. Power Systems*, Vol. 18, no. 1, pp.174-181, February 2003. (SCI 97+2)
 95. Ni, M., J. McCalley, **V. Vittal**, and T. Tayyib, "On-line risk-based security assessment," *IEEE Transactions on Power Systems*, Vol. 18, no. 1, pp.258-265, February 2003. (SCI 94)

96. Heydt, G. T., V. Vittal, "Feeding our Profession," *IEEE Power and Energy Magazine*, Vol. 1, no. 1, pp.38-45, January/February 2003. (SCI 16)
97. Jung, J., C. C. Liu, S. L. Tanimoto, and **V. Vittal**, "Adaptation in load shedding under vulnerable operating conditions," *IEEE Trans. Power Systems*, Vol. 17, no. 4, pp.1199-1205, November 2002. (SCI 47)
98. Xie, Z., G. Manimaran, **V. Vittal**, A. G. Phadke, V. Centeno, "An Information Architecture for Future Power Systems and Its Reliability Analysis," *IEEE Trans. Power Systems*, Vol. 17, no. 3, pp.857-863, August 2002. (SCI 35)
99. Fu, W., S. Zhao, J. McCalley, **V. Vittal**, N. Abi-Samra, "Risk Assessment for Special Protection Systems," *IEEE Transactions on Power Systems*, Vol. 17, no. 1, pp. 63-72, February 2002. (SCI 22)
100. Dai, Y., J. McCalley, **V. Vittal**, "Annual Risk Assessment for Overload Security," *IEEE Transactions on Power Systems*, pp. 616-623, Nov. 2001. (SCI 23)
101. Fu, W., J. McCalley, **V. Vittal**, "Transformer Risk Assessment," *IEEE Transactions on Power Systems*, Vol. 16, no. 3, pp. 346-353, August 2001. (SCI 29)
102. Zhu, S., **V. Vittal**, W. Kliemann, "Analyzing Dynamic Performance of Power Systems Over Parameter Space Using Normal Forms of Vector Fields Part I: Identification of Vulnerable Regions," *IEEE Transactions on Power Systems*, Vol. 16, no. 3, pp. 444-450, August 2001. (SCI 19)
103. Zhu, S., **V. Vittal**, W. Kliemann, "Analyzing Dynamic Performance of Power Systems Over Parameter Space Using Normal Forms of Vector Fields Part II: Comparison of System Structure," *IEEE Transactions on Power Systems*, Vol. 16, no. 3, pp. 451-455, August 2001. (SCI 8)
104. Yu, X., M. Khammash, **V. Vittal**, "Robust Design of a Damping Controller for Static Var Compensators in Power Systems," *IEEE Transactions on Power Systems*, Vol. 16, no. 3, pp. 456-462, August 2001. (SCI 23)
105. Heydt, G.T., C. C. Liu, A.G. Phadke, **V. Vittal**, "Solutions for the Crisis in Electric Power Supply," *IEEE Computer Applications in Power*, Vol. 14, No. 3, pp. 22, 30, July 2001. (SCI 66+3)
106. Gibbard, M., N. Martins, J. J. Sanchez-Gasca, N. Uchida, **V. Vittal**, L. Wang, "Recent Applications of Linear Analysis Techniques," *IEEE Transactions on Power Systems*, Vol. 16, no. 1, pp. 154-162, February 2001. (SCI 32)
107. Hua, W., James D. McCalley, **Vijay Vittal**, "Risk Based Voltage Security Assessment," *IEEE Transactions on Power Systems*, Vol. 15, No. 4, pp. 1247-1254, November 2000. (SCI 38)
108. Dai, Y., J. McCalley, **V. Vittal**, "Simplification, Expansion, and Enhancement of Direct Interior Point Algorithm for Power System Maximum Loadability," *IEEE Transactions on Power Systems*, Vol. 15, No. 3, pp. 1014-1021, August 2000. (SCI 34)
109. McCalley, J. D., **V. Vittal**, N. Abi-Samra, "Use of Probabilistic Risk in Security Assessment: A Natural Evolution," *International Conference on Large High Voltage Electric Systems (CIGRE)*, CIGRE 2000 Conference, August 2000, Paris.
110. Liu, C-C, J. W., Jung, G. T. Heydt, **V. Vittal**, A. G. Phadke, "The Strategic Power Infrastructure Defense (SPID) System - A Conceptual Design," *IEEE Control Systems Magazine*, Vol. 20, pp. 40-52, July 2000. (SCI 68)

111. Djukanovic, M., M. H. Khammash, and **V. Vittal**, "Sensitivity Based Structured Singular Value Approach to Stability Robustness of Power Systems," *IEEE Transactions on Power Systems*, Vol. 15, No. 2, pp. 825 - 830, May 2000. (SCI 15)
112. R. Qi, D. Cook, W. Kliemann, and **V. Vittal**, "Visualization of Stable Manifolds and Multidimensional Surfaces in the Analysis of Power System Dynamics," *Journal of Nonlinear Science*, Vol. 10, pp. 175-195, March 2000. (SCI 9)
113. **Vittal, V.**, "Consequence and Impact of Electric Utility Industry Restructuring on Transient Stability and Small-Signal Stability Analysis (Invited Paper)," *Proceedings of the IEEE*, Vol. 88, No. 2, pp. 196-207, February 2000. (SCI 40)
114. Hua, W., J. D. McCalley, and **V. Vittal**, "Increasing Thermal Rating by Risk Analysis," *IEEE Transactions on Power Systems*, Vol. 14, No. 3, pp. 815-828, August 1999. (SCI 38)
115. Djukanovic, M., M. H. Khammash, and **V. Vittal**, "Sequential Synthesis of Structured Singular Valued Based Decentralized Controllers in Power Systems," *IEEE Transactions on Power Systems*, Vol. 14, No. 2, pp. 635-641, May 1999. (SCI 36)
116. **Vittal, V.**, W. Kliemann, Y-X. Ni, D. G. Chapman, A. D. Silk, D. J. Sobajic, "Determination of Generator Groupings for an Islanding Scheme in the Manitoba Hydro System Using the Method of Normal Forms." *IEEE Transactions on Power Systems*, Vol. 13, No. 4, pp. 1345-1351, November 1998. (SCI 32)
117. McCalley, James D., V. Ajarapu, Jaime De La Ree, Arun G. Phadke, Gerald B. Sheblé, S. S. Venkata, **Vijay Vittal**, "Multimedia Courseware Sparks Interest in the Industry," *IEEE Computer Applications in Power*, Vol. 11, No. 4, pp. 26-32, October 1998. (SCI 9)
118. Djukanovic, M., M. H. Khammash, **V. Vittal**, "Application of Structured Singular Value Theory for Robust Stability and Control Analysis in Multimachine Power System Part I: Framework Development." *IEEE Transactions on Power Systems*, Vol. 13, No. 4, November 1998, pp. 1311-1316. (SCI 28)
119. Djukanovic, M., M. H. Khammash, **V. Vittal**, "Application of Structured Singular Value Theory for Robust Stability and Control Analysis in Multimachine Power System Part II: Numerical Simulation and Results," *IEEE Transactions on Power Systems*, Vol. 13, No. 4, November 1998, pp. 1317-1322. (SCI 1)
120. Jang, G., **V. Vittal**, and W. Kliemann, "Effect of Nonlinear Modal Interaction on Control Performance: Use of Normal Forms Technique in Control Design, Part 1: General Theory and Procedure," *IEEE Transactions on Power Systems*, Vol. 13, No. 2, May 1998, pp.401-407. (SCI 39)
121. Jang, G., **V. Vittal**, and W. Kliemann, "Effect of Nonlinear Modal Interaction on Control Performance: Use of Normal Forms Technique in Control Design, Part II: Case Studies," *IEEE Transactions on Power Systems*, Vol. 13, No. 2, May 1998, pp. 408-413. (SCI 13)
122. Ni, Y., **V. Vittal**, and W. Kliemann, "A Study of System Separation Mechanisms in the Neighborhood of a Relevant Type-n UEP Via Normal Form of Vector Fields." *IEE Proceedings on Generation, Transmission and Distribution*, Vol. 145, No. 2, March 1998, pp. 139-144. (SCI 3)
123. Ejebe, G.C., C. Jing, J. G. Waight, **V. Vittal**, G. Pieper, F. Jamshidian, P. Hirsch, and D. Sobajic, "Online Dynamic Security Assessment in an EMS," *IEEE Computer Applications in Power* II, No. 1, January 1998, pp. 43-47. (SCI 6)

124. Irizarry-Rivera, A., J. D. McCalley, **V. Vittal**, "Computing Probability of Instability for Stability Constrained Electric Power Systems," *Electric Power Systems Research*, Vol. 42, No. 2, August 1997, pp. 135-143. (SCI 2)
125. McCalley, J. D., A. A. Fouad, A. Irizarry-Rivera, **V. Vittal**, B. Agrawal, and R. Farmer, "A Risk Based Security Index for Determining Operating Limits for Stability-Limited Electric Power Systems," *IEEE Transactions on Power Systems*, Vol. 12, No. 3, pp.1210-1219, August 1997. (SCI 49)
126. Saha, S., A. A. Fouad, W. Kliemann, and **V. Vittal**, "Stability Boundary Approximation of a Power System Using the Real Normal Form of Vector Fields." *IEEE Transactions on Power Systems*, Vol. 12, No. 2, pp.797-802, May 1997. (SCI 36)
127. Thapar, J., **V. Vittal**, W. Kliemann, and A. A. Fouad, "Application of the Normal Form of Vector Fields to Predict Interarea Separation in Power Systems." *IEEE Transactions on Power Systems*, Vol. 12, No. 2, pp.844-850, May 1997. (SCI 56)
128. Chadalavada, V., **V. Vittal**, et al., "An On-Line Contingency Filtering Scheme for Dynamic Security Assessment," *IEEE Transactions on Power Systems*, Vol. 12, No. 1, pp. 153-161, February 1997. (SCI 17)
129. Ni, Y. X., **V. Vittal**, W. Kliemann, and A. A. Fouad, "Nonlinear Modal Interaction In HVDC/AC Power Systems with D. C. Modulation," *IEEE Transactions on Power Systems*, Vol. 11, No. 4, pp. 2011-2017, November 1996. (SCI 22)
130. Lin, C-M., **V. Vittal**, W. Kliemann, and A. A. Fouad, "Investigation of Modal Interaction and Its Effects on Control Performance in Stressed Power Systems Using Normal Forms of Vector Fields." *IEEE Transactions on Power Systems*, Vol. 11, No. 2, pp. 781-787, May 1996. (SCI 55)
131. Treinen, R. T., **V. Vittal**, and W. Kliemann, "An Improved Technique to Determine the Controlling Unstable Equilibrium Point in a Power System." *IEEE Transactions on Circuits and Systems*, Vol. 43, No. 4, pp. 313-323, April 1996. (SCI 20)
132. Ejebe, G. C., G. D. Irisarri, W. F. Tinney, V. Vittal, and G. Cauley, "A Sparse Formulation and Implementation of the Transient Energy Function Method for Dynamic Security Analysis," *International Journal of Electric Power and Energy Systems*, Vol. 18, No. 1, pp. 3-9, 1996. (SCI 3)
133. Venkataraman, S., M. K. Khammash, and **V. Vittal**, "Analysis and Synthesis of HVDC Controls for Robust Stability of Power Systems," *IEEE Transactions on Power Systems*, Vol. 10, No. 4, pp. 1933-1938, November 1995. (SCI 6)
134. Jing, C., **V. Vittal**, G. C. Ejebe, and G. D. Irisarri, "Incorporation of HVDC & SVC Models in the Northern States Power Co. (NSP) Network for On-Line Implementation of Direct Transient Stability Assessment," *IEEE Transactions on Power Systems*, Vol. 10, No. 2, pp. 898-906, May 1995. (SCI 11)
135. Khammash, M. H., **V. Vittal**, and C. D. Pawloski, "Analysis of Control Performance for Stability Robustness of Power Systems," *IEEE Transactions on Power Systems*, Vol. 9, No. 4, pp. 1861-1867, November 1994. (SCI 7)
136. Chadalavada, V., and **V. Vittal**, "Transient Stability Assessment for Network Topology Changes: Application of Energy Margin Analytical Sensitivity," *IEEE Transactions on Power Systems*, Vol. 9, No. 3, pp. 1658-1664, August 1994. (SCI 8)
137. Fouad, A. A., Qin Zhou, and **V. Vittal**, "System Vulnerability as a Concept to Assess Power System Dynamic Security," *IEEE Transactions on Power Systems*, Vol. 9, No. 2, pp.1009-1015, May 1994. (SCI 29)

138. **Vittal, V.**, M. H. Khammash, and C. D. Pawloski, "System Dynamic Performance: Robust Stabilization of Controls Over a Range of Operating Conditions," SADHANA Indian National Science Academy Proceedings in *Engineering Sciences*, Vol. 18, part 5, pp. 801-814, September 1993. (SCI 1)
139. Treinen, R., **V. Vittal**, and A. A. Fouad, "Application of a Modal-Based Transient Energy Function to a Large-Scale Stressed Power System: Assessment of Transient Stability and Transient Voltage Dip," *International Journal of Electrical Power & Energy Systems*, Vol. 15, No. 2, pp. 117-125, 1993. (SCI 4)
140. **Vittal, V.**, Chair, "Transient Stability Test Systems for Direct Stability Methods," IEEE Committee Report," *IEEE Transactions on Power Systems*, Vol. 7, No. 1, pp. 37-44, February 1992. (SCI 66)
141. **Vittal, V.**, N. Bhatia, and A. A. Fouad, "Analysis of the Inter-Area Mode Phenomenon in Power Systems Following Large Disturbances," *IEEE Transactions on Power Systems*, Vol. 6, No. 4, pp. 1515-1521, November 1991. (SCI 46)
142. **Vittal, V.**, G. M. Prabhu, and Swee Lian Lim, "A Parallel Computer Implementation of Power System Transient Stability Assessment Using the Transient Energy Function Method," *IEEE Transactions on Power Systems*, Vol. 6, No. 1, pp. 167-173, February 1991. (SCI 4)
143. **Vittal, V.**, R. Treinen, and M. Nikuie, "Research Experience for Undergraduates at Iowa State University," *IEEE Transactions of Power Systems*, Vol. 5, No. 4, pp. 1420-1424, November 1990. (SCI 1)
144. **Vittal, V.**, and A. A. Fouad, "A Noise Equivalent Bandwidth Approach to Obtain Reduced Order Models for Power System Excitation Control," *Electric Machines and Power Systems*, Vol. 17, No. 1, pp. 65-73, 1989. (SCI 2)
145. **Vittal, V.**, E-Z. Zhou, C. Hwang, and A. A. Fouad, "Derivation of Stability Limits Using Analytical Sensitivity of the Transient Energy Margin," *IEEE Transactions on Power Systems*, Vol. 4, pp. 1363-72, November 1989. (SCI 48)
146. **Vittal, V.**, N. Bhatia, A. A. Fouad, "Incorporation of Nonlinear Load Models in the Transient Energy Function Method," *IEEE Transactions on Power Systems*, Vol. 4, No. 3, pp. 1031-1036, August 1989. (SCI 7)
147. Fouad, A. A., **V. Vittal**, "Direct Transient Stability Assessment With Excitation Control," *IEEE Transactions on Power Systems*, Vol. 4, pp. 75-82, February 1989. (SCI 17)
148. Fouad, A. A., and **V. Vittal**, State of the Art Paper, "The Transient Energy Function Method," *International Journal of Electric Power & Energy Systems*, Vol. 10, No. 4, pp. 233-246, October 1988. (SCI 21)
149. **Vittal, V.**, and A. N. Michel, "A Variational Principle for Non-Conservative Power Systems," *Circuits Systems and Signal Processing*, Vol. 7, No. 3, pp. 413-424, 1988.
150. **Vittal, V.**, Tae-Kyoo Oh, A. A. Fouad, "Apparent Impedance Correlation of Transient Energy Margin and Time Simulation," *IEEE Transactions on Power Systems*, Vol. 3, pp. 455-462, May 1988. (SCI 1)
151. **Vittal, V.**, S. Rajagopal, A. A. Fouad, M. A. El-Kady, E. Vaahedi, and V. F. Carvalho, "Transient Stability Analysis of Stressed Power Systems Using the Transient Energy Function Method," *IEEE Trans. on Power Systems*, Vol. PWR-3, No. 1, pp. 239-244, February 1988. (SCI 8)
152. Fouad, A. A., **V. Vittal**, S. Rajagopal, V. F. Carvalho, M. A. El-Kady, C. K. Tang, J. V. Mitsche, and M. V. Pereira, "Direct Transient Stability Analysis Using Energy Functions Application to

- Large Power Networks," *IEEE Trans. on Power Systems*, Vol. PWRS-2, pp. 37-44, February 1987. (SCI 15)
153. **Vittal, V.**, S. Rajagopal, B. McCormack, P. Movall, and A. A. Fouad, "Analysis of Potential Energy Surfaces of Multimachine Power Systems Using Computer Graphics," *IEEE Transactions on Education*, Vol. E-29, No. 4, pp. 181-185, November 1986. (SCI 1)
 154. El-Kady, M. A., C. K. Tang, V. F. Carvalho, A. A. Fouad, and **V. Vittal**, "Dynamic Security Assessment Utilizing the Transient Energy Function Method," *IEEE Transactions on Power Systems*, Vol. PWRS-1, No. 3, pp. 284-291, August 1986. (SCI 27)
 155. Fouad, A. A., **V. Vittal**, T. Oh, and J. C. Raine, "Investigation of Loss of Generation Disturbances in the Florida Power and Light Company Network by the Transient Energy Function Method," *IEEE Transactions on Power Systems*, Vol. PWRS-1, No. 3, pp. 60-66, August 1986. (SCI 4)
 156. **Vittal, V.**, and A. N. Michel, "Stability and Security Assessment of a Class of Systems Governed by Lagrange's Equation with Application to Multi-Machine Power Systems," *IEEE Transactions on Circuits and Systems*, Vol. CAVES-33, pp. 623-635, June 1986. (SCI 3)
 157. Fouad, A. A., K. C. Kruempel, **V. Vittal**, A. Ghafurian, K. Nodehi, and J. V. Mitsche, "Transient Stability Program Output Analysis," *IEEE Transactions on Power Systems*, Vol. PWRS-1, pp. 2-9, February 1986. (SCI 9)
 158. Michel, A. N., and **V. Vittal**, "On the Mechanism of Transient Instability of Power Systems," *Circuits, Systems and Signal Processing*, Vol. 4, No. 3, pp. 413-434, 1985. (SCI 5)
 159. **Vittal, V.**, A. N. Michel, and A. A. Fouad, "Power System Transient Stability Analysis: Formulation as Nearly Hamiltonian System," *Circuits, Systems and Signal Processing*, Vol. 3, No. 1, pp. 105-122, 1984. (SCI 7)
 160. Fouad, A. A., **V. Vittal**, and T. Oh, "Critical Energy for Direct Transient Stability Assessment of a Multimachine Power System," *IEEE Transactions on Power Apparatus and Systems*, Vol. 103, pp. 2199-2206, August 1984. (SCI 57-2)
 161. Michel, A. N., B. H. Nam, and **V. Vittal**, "Computer Generated Lyapunov Functions for Interconnected Systems: Improved Results with Applications to Power Systems," *IEEE Transactions on Circuits and Systems*, Vol. 31, pp. 189-198, February 1984. (SCI 32)
 162. Fouad, A. A., and **V. Vittal**, "Power System Response to a Large Disturbance: Energy Associated with System Separation," *IEEE Transactions on Power Apparatus and Systems*, Vol. 102, pp. 3534-3540, November 1983. (SCI 11)
 163. Pai, M. A., and **V. Vittal**, "Multi-Machine Stability Analysis of Power Systems Using Vector Lyapunov Function with Inertial Center Decomposition," *International Journal of Electric Power and Energy Systems*, Vol. 5, No. 3, pp 139-144, July 1983.
 164. Michel, A. N., A. A. Fouad, and **V. Vittal**, "Power System Transient Stability Using Individual Machine Energy Functions," *IEEE Transactions on Circuits and Systems*, Vol. 30, No. 5, pp. 266-276, May 1983. (SCI 61)

Publications Accepted-Yet to Appear

1. Ramasubramanian, D., Z. Yu, R. Ayyanar, **V. Vittal**, and J. Undrill, "Converter Model for Representing Converter Interfaced Generation in Large Scale Grid Simulations," To appear in the *IEEE Transactions on Power Systems*.

2. Mitra, P., **V. Vittal**, P. Pourbeik, A. Gaikwad, "Load Sensitivity Studies in Power Systems with Non-smooth Load Behavior," To appear in the *IEEE Transactions on Power Systems*.
3. Salloum, A., Y.M. Al-Abdullah, **V. Vittal**, K.W. Hedman, "Impacts of Constraint Relaxations on Power System Operational Performance," To appear in the *IEEE Power and Energy Technology Systems Journal*.
4. Datta, S., and **V. Vittal**, "Operational Risk Metric for Dynamic Security Assessment of Renewable Generation," To appear in the *IEEE Transactions on Power Systems*.
5. Li, Q., and V. Vittal, "Non-Iterative Enhanced SDP Relaxations for Optimal Scheduling of Distributed Energy Storage in Distribution Systems," To appear in the *IEEE Transactions on Power Systems*.

Refereed Conference Proceeding Articles

1. Salloum A., Y. Al-Abdullah, K. Hedman and **V. Vittal**, "Risk-Based Penalty Price Determination Procedure for Transmission Constraint Relaxation," Paper#245 2016 International Conference on Probabilistic Methods Applied to Power Systems, October 16-20, Beijing, China.
2. Huang, Q., and **V. Vittal**, "OpenHybridSim: An Open Source Tool for EMT and Phasor Domain Hybrid Simulation," Paper #16PESGM0410 *IEEE PES General Meeting* 2016, Boston, MA July 2016.
3. Li, Q., and **V. Vittal**, "The Convex Hull of the AC Power Flow Equations in Rectangular Coordinates," Paper #16PESGM1542 *IEEE PES General Meeting* 2016, Boston, MA July 2016.
4. Ramasubramanian, D., **V. Vittal**, J. Undrill, "Transient Stability Analysis of an all Converter Interfaced Generation WECC System," Paper #44 PSCC 2016, Genoa, Italy, June 20-24, 2016.
5. He, M., **V. Vittal**, J. Zhang, "A Sparsified Vector Autoregressive Model for Short-Term Wind Power Forecasting," Paper#15PESGM0932 *IEEE PES General Meeting* 2015, Denver, CO, July 2015.
6. Zhang, H., **V. Vittal**, G.T. Heydt, "An Aggregated Multi-Cut Decomposition Algorithm for Two-Stage Transmission Expansion Planning Problems," Paper#15PESGM0039 *IEEE PES General Meeting* 2015, Denver, CO, July 2015.
7. Eftekharnajad, S., G.T. Heydt, **V. Vittal**, "Optimal Generation Dispatch with High Penetration of Photovoltaic Generation," Paper#15PESGM2490 *IEEE PES General Meeting* 2015, Denver, CO, July 2015.
8. **Vittal, V.**, "Integrating SCADA and PMU Measurements to Detect Islanding Following Large Hurricanes," Paper#15PESGM2578 *IEEE PES General Meeting* 2015, Denver, CO, July 2015.
9. Quintero, J., H. Zhang, Y. Chakhchoukh, **V. Vittal**, and G.T. Heydt, "Next Generation Transmission Planning Framework: Models, Tools, and Educational Opportunities," Paper#15PESGM1615 *IEEE PES General Meeting* 2015, Denver, CO, July 2015.
10. Quintero, J., **V. Vittal**, G.T. Heydt, and H. Zhang, "The Impact of Increased Penetration of Converter Control-Based Generators on Power System Modes of Oscillation," Paper#15PESGM1613 *IEEE PES General Meeting* 2015, Denver, CO, July 2015.
11. Liu, Y., **V. Vittal**, "Distribution Side Mitigation Strategy for Fault Induced Delayed Voltage Recovery," Paper #14PESGM0600 *IEEE PES General Meeting* 2014, National Harbor, MD, July 2014.

12. Zhang, S., **V. Vittal**, "Design of Wide-Area Damping Control Robust to Transmission Delay Using μ -Synthesis Approach," Paper #14PESGM0267 *IEEE PES General Meeting 2014*, National Harbor, MD, July 2014.
13. **Vittal, V.**, "Dynamic Security Assessment in the Future Grid," Paper #14PESGM2457 *IEEE PES General Meeting 2014*, National Harbor, MD, July 2014.
14. **Vittal, V.**, "DSA Using Synchronized Phasor Measurements and Decision Trees," Paper #14PESGM0159 *IEEE PES General Meeting 2014*, National Harbor, MD, July 2014.
15. Liu, Y., **V. Vittal**, J. Undrill, J. Eto, "Transient Model of Air-Conditioner Compressor Single Phase Induction Motor," Paper #14PESGM1172 *IEEE PES General Meeting 2014*, National Harbor, MD, July 2014.
16. **Vittal, V.**, "Impact of Large Scale PV Generation," Paper #14PESGM1749 *IEEE PES General Meeting 2014*, National Harbor, MD, July 2014.
17. Zhang, H., G.T. Heydt, **V. Vittal**, J. Quintero, "An Improved Network Model for Transmission Expansion Planning Considering Reactive Power and Network Losses," Paper #14PESGM0085 *IEEE PES General Meeting 2014*, National Harbor, MD, July 2014.
18. Paramasivam, M., A. Salloum, V. Ajjarapu, **V. Vittal**, N. Bhatt, S. Liu, "Dynamic Optimization Based Reactive Power Planning to Mitigate Slow Voltage Recovery and Short Term Voltage Instability," Paper #14PESGM0687 *IEEE PES General Meeting 2014*, National Harbor, MD, July 2014.
19. Zhang, S. and **V. Vittal**, "Improving Grid Resiliency Using Hierarchical Wide Area Measurements," Paper # GM0545 *IEEE PES General Meeting 2013*, Vancouver, BC, Canada, July 2013.
20. Mitra, P., V. Vittal, G.T. Heydt, and R. Ayyanar, "Effectiveness of Anti-Islanding Schemes Following Faulty Recloser Operation," Paper # GM0091 *IEEE PES General Meeting 2013*, Vancouver, BC, Canada, July 2013.
21. He, M., L. Yang, J. Zhang, and **V. Vittal**, "Spatio-temporal Analysis for Smart Grids with Wind Generation Integration," 2013 International Conference on Computing, Networking and Communications (ICNC), pp. 1107-1101, 2013.
22. **Vittal, V.**, "The Future Grid to Enable Sustainable Energy Systems," Paper #2012GM0835, *IEEE PES General Meeting 2012*, San Diego, CA, July 2012.
23. Messina, A., **V. Vittal**, "A Structural Time Series Approach to Modeling Dynamic Trends in Power Systems," Paper #2012GM0314 *IEEE PES General Meeting 2012*, San Diego, CA, July 2012.
24. Kezunovic, M., **V. Vittal**, S. Meliopoulos, M. Venkatasubramanian, A. Sprinston, "Synchrophasors and the Smart Grid," Paper #2012GM1771, *IEEE PES General Meeting 2012*, San Diego, CA, July 2012.
25. Heydt, G.T., **V. Vittal**, "Curriculum Development: Transmission Expansion Planning for Systems with Renewable Resources," Paper # 2012GM0019, *IEEE PES General Meeting 2012*, San Diego, CA, July 2012.
26. Zhang, H., G.T. Heydt, **V. Vittal**, H. Mittelmann, "Transmission Expansion Planning Using an AC Model: Formulations and Possible Relaxations," Paper #2012GM1449, *IEEE PES General Meeting 2012*, San Diego, CA, July 2012.
27. Zhang, Q., **V. Vittal**, G.T. Heydt, Y. Chakhchoukh, N. Logic, S. Sturgill, "The Time Skew Problem in PMU Measurements," Paper #2012GM1047, *IEEE PES General Meeting 2012*, San Diego, CA, July 2012.

28. **Vittal, V.**, "Application of Phasor Measurements for Dynamic Security Assessment Using Decision Trees," Paper #2012GM0173, *IEEE PES General Meeting 2012*, San Diego, CA, July 2012.
29. Murugesan, S., J. Zhang, and **V. Vittal**, "A Data-driven Spatio-temporal Approach based Markov Model for Wind Generation Forecast," *Proceedings of the third IEEE PES Conference on Innovative Smart Grid Technologies*, Washington D.C., January 2012.
30. He, M., J. Zhang, and **V. Vittal**, "A Data Mining Framework for Online Dynamic Security Assessment: Decision Trees, Boosting, and Complexity Analysis," *Proceedings of the third IEEE PES Conference on Innovative Smart Grid Technologies*, Washington D.C., January 2012.
31. Ma, F., X. Luo, V. Vittal, "Application of Dynamic Equivalencing in Large-Scale Power Systems," *Proceedings of the 2011 IEEE PES General Meeting*, Detroit, USA, July, 24-28, 2011.
32. Eftekharnjad, S., G.T. Heydt, **V. Vittal**, "Implications of Smart Grid Technology of Transmission System Reliability," *Proceedings of the 2011 IEEE PES Power System Conference and Exposition*, Phoenix, USA, March 20-23, 2011.
33. Gautam, D., R. Ayyanar, **V. Vittal**, T. Harbour, "Supplementary Control for Damping Power Oscillation Due to Increased Penetration of Doubly Fed Induction Generators in Large Power Systems," *Proceedings of the 2011 IEEE PES Power System Conference and Exposition*, Phoenix, USA, March 20-23, 2011. (SCI 3)
34. Genc, I., R. Diao, **V. Vittal**, "Computation of Transient Stability Related Security Regions and Generation Rescheduling Based on Decision Trees," Paper #2010GM0363, *Proceedings of the 2010 IEEE PES General Meeting*, Minneapolis, MN, USA, July 25-29, 2010.
35. Wang, C., **V. Vittal**, S. Kolluri, S. Mandal, "PTDF-Based Automatic Restoration Path Selection," Paper #2010GM0646, *Proceedings of the 2010 IEEE PES General Meeting*, Minneapolis, MN, USA, July 25-29, 2010.
36. Gautam, D., **V. Vittal**, and T. Harbour, "Impact of DFIG based Wind Turbine Generators on Transient and Small Signal Stability of Power Systems," Paper #2010GM0387, *Proceedings of the 2010 IEEE PES General Meeting*, Minneapolis, MN, USA, July 25-29, 2010.
37. Gautam, D., **V. Vittal**, and T. Harbour, "Impact of DFIG based Wind Turbine Generators on Transient and Small Signal Stability of Power Systems," Paper #09GM0483, *Proceedings of the 2009 IEEE PES General Meeting*, Calgary, Canada, July 26-30, 2009. (SCI 3)
38. Malhara, S. and **V. Vittal**, "Monitoring Sag and Tension of a Tilted Transmission Line Using Geometric Transformation," Paper #09GM0303, *Proceedings of the 2009 IEEE PES General Meeting*, Calgary, Canada, July 26-30, 2009.
39. Heydt, G., B. Sathyanarayana, and **V. Vittal**, "Distribution System Design Enabling Renewable Energy Resource Deployment," Paper #09GM0017, *Proceedings of the 2009 IEEE PES General Meeting*, Calgary, Canada, July 26-30, 2009. (SCI 5)
40. **V. Vittal**, G.T. Heydt, "The Problem of Initiating Controlled Islanding of a Large Interconnected Power System Solved as a Pareto Optimization," Paper #09PSCE0021, *Proceedings of the 2009 IEEE PES Power System Conference and Exposition*, Seattle, WA, March 15-18, 2009.
41. R. Diao, **V. Vittal**, K. Sun, S. Kolluri, S. Mandal, F. Galvan, "Decision Tree Assisted Controlled Islanding for Preventing Cascading Events," Paper #09PSCE0198, *Proceedings of the 2009 IEEE PES Power System Conference and Exposition*, Seattle, WA, March 15-18, 2009. (SCI 4)
42. B. Sapkota, **V. Vittal**, "Study of Voltage Collapse Cases of a Large Power System Using Static and Dynamic Approaches," Paper #09PSCE0490, *Proceedings of the 2009 IEEE PES Power System Conference and Exposition*, Seattle, WA, March 15-18, 2009.

43. M. Randhawa, B. Sapkota, **V. Vittal**, S. Kolluri, S. Mandal, "Voltage Stability Assessment of a Large Power System," *Proceeding of the 2008 IEEE PES General Meeting*, Pittsburgh, PA, July 20-224, 2008.
44. K. Sun, S. Likhate, **V. Vittal**, S. Kolluri, S. Mandal, "An Online Dynamic Security Assessment Scheme Using Phasor Measurements and Decision Trees," *Proceeding of the 2008 IEEE PES General Meeting*, Pittsburgh, PA, July 20-224, 2008.
45. B. Yang, **V. Vittal**, G.T. Heydt, A. Sen, "A Novel Slow Coherency Based Graph Theoretic Islanding Strategy," *Proceedings of the 2007 IEEE PES General Meeting*, Tampa, FL, June 24-28, 2007. (SCI 5)
46. S. Liu, A.R. Messina, and **V. Vittal**, "Estimating Nonlinear System Effects on Control Performance: A Normal Form Approach," *Proceedings of the 2006 IEEE Power System Conference and Exposition*, Atlanta, GA, October 29 – November 1, 2006.
47. W. Shao, **V. Vittal**, "BIP-Based OPF for Line and Bus-bar Switching to Relieve Overloads and Voltage Violations," *Proceedings of the 2006 IEEE Power System Conference and Exposition*, Atlanta, GA, October 29 – November 1, 2006.
48. W. Jiang, **V. Vittal**, "Optimal Placement of Phasor Measurements for the Enhancement of State Estimation," *Proceedings of the 2006 IEEE Power System Conference and Exposition*, Atlanta, GA, October 29 – November 1, 2006.
49. A. Sen, P. Ghosh, **V. Vittal**, and B. Yang, "A New Min-Cut Problem with Application to Electric Power Network Partitioning," *Proceedings of the 44th Annual Allerton Conference*, Allerton House, UIUC, Illinois, USA, September 27-29, 2006.
50. P. Ramachandran, **V. Vittal**, "On-Line Monitoring of Sag in Overhead Transmission Lines with Leveled Spans," *Proceedings of the 38th North American Power Symposium*, Southern Illinois University, Carbondale, IL, September 17-19, 2006.
51. Q. Liu, **V. Vittal**, "Damping improvement using a multiple input controller in a TCSC device," 06GM0149 *Proceeding of the IEEE PES General Meeting*, Montreal, Canada, June 2006.
52. S. Liu, A.R. Messina, **V. Vittal**, "A normal form based approach to place power system stabilizers," 06GM0162 *Proceeding of the IEEE PES General Meeting*, Montreal, Canada, June 2006.
53. X. Wang, W. Shao, **V. Vittal**, "Adaptive corrective control strategies for preventing power system blackouts," *Proceeding of the 15th Power System Computation Conference*, Liege, Belgium, August 2005.
54. U. D. Annakage, M.J. Gibbard, S. Liu, A.R. Messina, J. Sanchez-Gasca, **V. Vittal**, D.J. Vowles, "Analysis of Higher Order Terms for Small Signal Stability Analysis," *Proceeding of the 2005 IEEE PES General Meeting*, San Francisco, June 2005.
55. V. Ajjarapu, N. Elia, L. Jin, R. Kumar, H. Liu, J.D. McCalley, **V. Vittal**, "An Application of Reachable Set Analysis in Power System Transient Stability Assessment," *Proceeding of the 2005 IEEE PES General Meeting*, San Francisco, June 2005.
56. Q. Liu, V. Vittal, N. Elia, "LMI Pole Placement Based Robust Supplementary Damping Controller (SDC) for a Thyristor Controlled Series Capacitor (TCSC) Device," *Proceeding of the 2005 IEEE PES General Meeting*, San Francisco, June 2005.
57. V. Ajjarapu, N. Elia, L. Jin, R. Kumar, H. Liu, J.D. McCalley, **V. Vittal**, "Reachability Analysis Based Minimal Load Shedding Determination," *Proceeding of the 2005 IEEE PES General Meeting*, San Francisco, June 2005.

58. W. Shao and **V. Vittal**, "A New Algorithm for Relieving Overloads and Voltage Violations by Transmission Line and Bus-bar Switching," *Proceeding of the 2004 IEEE PES Power System Conference and Exposition*, New York, October 2004.
59. X. Wang and **V. Vittal**, "System Islanding Using Minimal Cutsets with Minimum Net Flow," *Proceeding of the 2004 IEEE PES Power System Conference and Exposition*, New York, October 2004. (SCI 22)
60. B. Ramanathan and **V. Vittal**, "A Small Signal Stability Performance Boundary for Direct Load Control," *Proceeding of the 2004 IEEE PES Power System Conference and Exposition*, New York, October 2004.
61. S. Liu, A. R. Messina, **V. Vittal**, "Characterization of Nonlinear Modal Interaction using Normal Forms and Hilbert Analysis," *Proceeding of the 2004 IEEE PES Power System Conference and Exposition*, New York, October 2004.
62. Liu, H, J.D. McCalley, R. Kumar, N. Elia, V. Ajjarapu, **V. Vittal**, "Planning Power System Hybrid Control for Transmission Enhancement," *Proceeding of the 36th North American Power Symposium*, Moscow, ID, pp.299-306, August 2004.
63. Heydt, G.T., P.W. Sauer, and **V. Vittal**, "Opportunities for Peer Recognition in Power Engineering Education," *Proceeding of the 36th North American Power Symposium*, Moscow, ID, pp.432-435, August 2004.
64. Wang, X., and **V. Vittal**, "Slow Coherency Grouping Based Islanding Using Minimal Cutsets," *Proceeding of the 35th North American Power Symposium*, Rolla, MO, pp.315-320, October 2003.
65. Ramanathan, B., and **V. Vittal**, "A Structured Singular Value Based Framework for Direct Load Control," *Proceeding of the 35th North American Power Symposium*, Rolla, MO, pp.478-483, October 2003.
66. Qiu, W., M. Khammash, and **V. Vittal**, "Power System Stabilizer Design Using LPV Approach," *Proceeding of the 34th North American Power Symposium*, Tempe, AZ, pp.67-74, October 2002.
67. You, H., **V. Vittal**, "A Slow Coherency Identification Algorithm Considering Load Dynamics," *of the 34th North American Power Symposium*, Tempe, AZ, pp.538-544, October 2002.
68. You, H., **V. Vittal**, J. Jung, C-C. Liu, M. Amin, R. Adapa, "An Intelligent Adaptive Load Shedding Scheme," *Proceedings of the 14th Power System Computation Conference*, Paper 6, Session PS17 Wide-Area Control, Seville, Spain, June, 2002.
69. Subakti, D. O., M. H. Khammash, **V. Vittal**, "Robustness Analysis for TCSC in Power Systems and its Performance Comparison against SVCs," *Proceedings of the North American Power Symposium*, College Station, TX, pp. 229-236, October 2001.
70. Xie, Z., G. Manimaran, V. Vittal, A. G. Phadke, "Innovative Information Architecture for Future Power Systems," *Proceedings of the North American Power Symposium*, College Station, TX, pp. 590-597, October 2001.
71. Zhu, S., W. Kliemann, **V. Vittal**, "Analyzing Dynamic Performance of Power Systems Over Parameter Space Using the Method of Normal Forms," *Proceedings of the National Power Systems Conference*, Bangalore, India, pp. 100-105, December 2000.
72. Dai, Y., J. McCalley, **V. Vittal**, and M. Bhuiyan, "Annual Risk Assessment for Voltage Stability and Generation Adequacy," *Proceedings of the VI International Conference on Probabilistic Methods Applied to Power Systems*, September, 2000, Madeira Island, Portugal. (SCI 5)
73. Van Acker, V., J. McCalley, **V. Vittal**, J. Pecos-Lopes, "Risk-Based Transient Stability Assessment," *Proceedings of the Budapest Powertech Conference*, Budapest, Hungary, Sept. 1999. (SCI 3)

74. McCalley, J. D., **V. Vittal**, and N. Abi-Samra, "An Overview of Risk Based Security Assessment," *Proceedings of the 1999 IEEE Power Engineering Society Summer Power Meeting*, pp. 173-178, July 1999. (SCI 24)
75. McCalley, J. D., **V. Vittal**, N. Abi-Samra, H. Wan, Y. Dai, "Voltage Risk Assessment," *Proceedings of the 1999 IEEE Power Engineering Society Summer Power Meeting*, pp. 179-184, July 1999. (SCI 3)
76. **Vittal, V.**, J. D. McCalley, V. Van Acker, W. Fu, and N. Abi-Samra, "Transient Instability Risk Assessment," *Proceedings of the 1999 IEEE Power Engineering Society Summer Power Meeting*, pp. 206-211, July 1999. (SCI 1)
77. **Vittal, V.**, G. T. Heydt, "The Impact of Funding Agency Programmatic Elements on Power Engineering Research at Universities," *Proceedings of the 30th North American Power Symposium*, Cleveland, Ohio, October 19-20, 1998, pp. 1-6.
78. Fu, Weihui, James D. McCalley, **Vijay Vittal**, "Risk-based Assessment of Transformers Thermal Loading Capability," *Proceedings of the 30th North American Power Symposium*, Cleveland, Ohio, October 19-20, 1998, pp. 118-123.
79. Bhavé, M., J. McCalley, V. Ajjarapu, G. Sheblé, S. S. Venkata, **V. Vittal**, M. Mallini, A. Phadke, J. De La Ree, "Project Powerlearn – Development of a Complete Module," *Proceedings of the 30th North American Power Symposium*, Cleveland, Ohio, October 19-20, 1998, pp. 228-233.
80. Van Acker, Vincent, Matt Mitchell, James D. McCalley, **Vijay Vittal**, "Risk Based Transient Stability Assessment using Neural Networks," *Proceedings of the 30th North American Power Symposium*, Cleveland, Ohio, October 19-20, 1998, pp. 328-335.
81. Dai, Youjie, James D. McCalley, **V. Vittal**, "A Heuristic Method to Arrange Unit Commitment for One Year Considering Hydro-Thermal Coordination," *Proceedings of the 30th North American Power Symposium*, Cleveland, Ohio, October 19-20, 1998, pp. 382-387.
82. Wan, Hua, James D. McCalley, **Vijay Vittal**, "Decision Making under Risk," *Proceedings of the 30th North American Power Symposium*, Cleveland, Ohio, October 19-20, 1998, pp. 428-433.
83. Dai, Y., J. McCalley, **V. Vittal**, "Stochastic Load Model Identification and its Possible Applications," *Proceedings of the 1997 North American Power Symposium*, Laramie, WY, October 1997.
84. **Vittal, V.**, J. McCalley, V. Ajjarapu, G. Sheblé, S. Venkata, M. Bisat, P. Luu, A. Alonso, A. Phadke, J. De La Ree, "Collaborative Effort in Developing multimedia Based Power System Engineering Modules," *Proceedings of the 1997 North American Power Symposium*, Laramie, WY, October 1997. (SCI 1)
85. McCalley, J., **V. Vittal**, V. Ajjarapu, G. Sheblé, S. Venkata, M. Bisat, P. Luu, A. Alonso, A. Phadke, J. De La Ree, "Module Based Multimedia Courseware Development for Power System Engineering Education," *Proceedings of the 59th Annual ASEE North Midwest Section Meeting*, Iowa City, IA, October 9-11, 1997.
86. Irizarry-Rivera, A., J. McCalley, and **V. Vittal**, "Limiting Operating Point Functions and their Influence on Probability of Stability," *Proceedings of the Fifth International Conference of Probabilistic Methods Applied to Power Systems*, Vancouver, September 1997.
87. Zhu, Z., S. Zhao, J. McCalley, **V. Vittal**, and A. Irizarry-Rivera, "Risk-Based Security Assessment Influenced by Generator Rejection," *Proceedings of the Fifth International Conference of Probabilistic Methods Applied to Power Systems*, Vancouver, September 1997.
88. Ni, Y., **V. Vittal**, W. Kliemann, "Investigation of Nonlinear Modal Behavior of HVDC/AC Power Systems Through A Scanning Tool Via Normal Form Technique," *Proceedings of IEEE*

- International Symposium on Circuits and Systems 97*, Paper No. 2P1-16, pp. 945-948, Hong Kong, 1997.
89. Ni, Y., **V. Vittal**, W. Kliemann, "System Trajectory in the Neighborhood of the Controlling UEP Viewed From Decoupled Modal Space Via Normal Form of Vector Fields." *Proceedings of the 28th North American Power Symposium*, pp. 551-558, Cambridge, MA, November 10-12, 1996. (SCI 1)
 90. Pawloski, C. D., M. H. Khammash, **V. Vittal**, and K. Zarley, "Reduction in the Computation Time for Robust Stability Analysis of Power Systems." *Proceedings of the 28th North American Power Symposium*, pp. 467-474, Cambridge, MA, November 10-12, 1996.
 91. Pawloski, C. D., M. H. Khammash, **V. Vittal**, "An Investigation Into the Placement of Norm-Bounded Perturbations to Analyze Stability Robustness of Power Systems." *Proceedings of the 1996 IEEE International Conference on Control Applications*, pp. 744-750, Dearborn, MI, September 15-18, 1996.
 92. McCalley, J., V. Ajjarapu, G. Sheblé, and **V. Vittal**, "Sophomore Course Development in Power System Analysis with Interactive Matlab Modules," Midwest Symposium on Circuits and Systems, Ames, IA, August 1996.
 93. Ni, Y., **V. Vittal**, W. Kliemann, and A. A. Fouad, "Application of the Normal Form of Vector Fields to AC/DC Power Systems," *Proceedings of the 27th North American Power Symposium*, pp. 6-12, Bozeman, MT, October 2-3, 1995.
 94. Saha, S., W. Kliemann, **V. Vittal**, and A. A. Fouad, "Effect of Stress on Boundary of Stability of a Power System," *Proceedings of the 27th North American Power Symposium*, pp. 257-262, Bozeman, MT, October 2-3, 1995.
 95. Pawloski, C. D., M. H. Khammash, and **V. Vittal**, "Analysis of Stability Robustness of a Power System With Loads Represented by Induction Motors," *Proceedings of the 4th IEEE Conference on Control Applications*, pp. 818-824, Albany, NY, September 28-29, 1995.
 96. Saha, S., **V. Vittal**, W. Kliemann, and A. A. Fouad, "Local Approximation of Stability Boundary of a Power System Using the Real Normal Forms of Vector Fields," *Proceedings of the 1995 ISCAS*, Vol. 3, pp. 2330-2333, Seattle, WA, April 30 - May 3, 1995. (SCI 3)
 97. **Vittal, V.**, V. Chadalavada, G. C. Ejebe, and G. D. Irisarri, "Contingency Filters for Dynamic Security Assessment Using the Transient Energy Function Method," *Proceeding of the Eighth National Power Systems Conference*, Vol. 1, pp. 239-244, New Delhi, India, December 14-17, 1994.
 98. McCalley, J., A. Fouad, **V. Vittal**, A. Irizarry-Rivera, R. Farmer, and B. Agrawal, "A Probabilistic Problem in Electric Power System Operation: The Economy-Security Tradeoff for Stability-Limited Systems," *Proceedings of the Third International Workshop on Rough Sets and Soft Computing*, San Jose, CA, November 10-12, 1994.
 99. Ejebe, G. C., G. D. Irisarri, W. F. Tinney, **V. Vittal**, and A. A. Fouad, "A Sparse Formulation and Implementation of the Transient Energy Function Method for Dynamic Stability Analysis," *Proceedings of the International Conference on Power System Technology*, pp. 599-605, October 18-21, 1994, Beijing, China.
 100. Starrett, S. K., W. Kliemann, **V. Vittal**, and A. A. Fouad, "Excitation of Second-Order Normal Forms and First-Order Jordan Form Modes of Oscillation," *Proceedings of the 26th, North American Power Symposium*, pp. 27-36, Manhattan, KS, September 1994.

101. Jing, C., **V. Vittal**, and G. C. Ejebe, "The Simplification of HVDC and SVC Models in the Mid-Continent Area Power Pool (MAPP) for First Swing Stability Analysis," *Proceedings of the 26th, North American Power Symposium*, pp. 491-497, Manhattan, KS, September 1994.
102. Lin, C. M., W. Kliemann, **V. Vittal**, and A. A. Fouad, "Interaction Between Excitation Control Modes and Inertial Modes in Stressed Power Systems," *Proceedings of the 26th, North American Power Symposium*, pp. 669-678, Manhattan, KS, September 1994.
103. Venkataraman, S., **V. Vittal**, and M. H. Khammash, "Enhancement of Power System Transmission Using Robust Control Design," *Proceedings of the IEEE T & D Conference*, pp. 215-220, Chicago, IL, 1994. (SCI 1)
104. **Vittal, V.**, "The Power Systems Program Area at NSF (1993-1994)," *Proceedings of the 56th American Power Conference*, pp. 846-851, Chicago, IL, 1994.
105. **Vittal, V.**, M. Khammash, and C. Pawloski, "Analysis of Control Performance for Stability Robustness of Power Systems," *Proceedings of IEEE Conference on Decision and Control*, pp. 2341-2346, San Antonio, Texas, 1993. (SCI 1)
106. Starrett, S. K., **V. Vittal**, A. A. Fouad, and W. Kliemann, "A Methodology for the Analysis of Nonlinear, Interarea Interactions Between Power System Natural Modes of Oscillation Utilizing Normal Forms," *Proceedings of the 1993 International Symposium on Nonlinear Theory and Its Application*, Vol. 2, pp. 523-538, Sheraton Waikiki Hotel, Hawaii, December 5-10, 1993.
107. Lin, C., **V. Vittal**, and A. A. Fouad, "Dynamic Modal Interaction In A Stressed Power System," *Proceedings of the 1993 North American Power Symposium*, pp. 38-43, Howard University, Washington, D.C., October 11-12, 1993.
108. Starrett, S. K., W. Kliemann, **V. Vittal**, and A. A. Fouad, "Power System Modal Behavior: Significance of Second and Third Order Nonlinear Terms," *Proceedings of the 1993 North American Power Symposium*, pp. 246-255, Howard University, Washington, D.C., October 11-12, 1993.
109. Venkataraman, S., **V. Vittal**, and M. H. Khammash, "Analysis of Stability Robustness of HVDC Controls Using L Robustness Approach," *Proceedings of the 1993 North American Power Symposium*, pp. 256-265, Howard University, Washington, D.C., October 11-12, 1993.
110. **Vittal, V.**, W. Kliemann, S. Starrett, and A. A. Fouad, "Analysis of Stressed Power Systems Using Normal Forms," *Proceedings of the 1992 ISCAS*, Vol. V., pp. 2553-2556. (SCI 1)
111. **Vittal, V.**, "Extending Applications of the Transient Energy Function," *Proceedings of the 35th Midwest Symposium on Circuits and Systems*, August 9-12, 1992.
112. **Vittal, V.**, and V. Chadalavada, "Analytical Sensitivity of the Transient Energy Margin With Exciter Effects," *Proceedings of the 23rd North American Power Symposium*, pp. 24-33, Carbondale, IL, October 7-8, 1991. (SCI 2)
113. **Vittal, V.**, B. Ray, R. Treinen, and A. A. Fouad, "A Modal-Based Transient Energy Function for Analysis of the Inter-Area Mode," *Proceedings of the 23rd North American Power Symposium*, pp. 11-16, Carbondale, IL, October 7-8, 1991.
114. **Vittal, V.**, N. Bhatia, and A. A. Fouad, "Analysis of the Inter-Area Mode Phenomenon in Power Systems Following Large Disturbances," *Proceedings of the 1991 IEEE International Symposium on Circuits and Systems*, pp. 982-985, Singapore, June 11-19, 1991.
115. **Vittal, V.**, R. D'souza, and A. A. Fouad, "Analytical Sensitivity of Transient Energy Margin Including Second Order Series Expansion," *Proceedings of the Tenth Power Systems Computation Conference*, pp. 481-486, Graz, Austria, August 1990. (SCI 3)

116. **Vittal, V.**, and Jolene Gleason, "Determination of Transient Stability Constrained Line Flow Limits: An Application of Linearized Techniques for the Transient Energy Function Method," *Proceedings of the 21st North American Power Symposium*, pp. 142-150, October 9-10, 1989.
117. Hwang, C., **V. Vittal**, and A. A. Fouad, "Determination of Interface Flow Stability Limits by Sensitivity Analysis of Transient Energy Margin," *Proceedings of the IFAC International Symposium on Power Systems and Power Plant Control*, pp. 189-194, August 22-25, 1989, Seoul, Korea.
118. **Vittal, V.**, "A Generalized Procedure to Obtain First Integrals for Non-Conservative Dynamical Systems: Application to Power Systems," *Proceedings of the International Symposium on Circuits and Systems*, Vol. 3, pp. 1984-1987, May 1989.
119. Shi, H., and **V. Vittal**, "Approximation of Dissipation Terms in the Transient Energy Function," *Proceedings of the 20th North American Power Symposium*, pp. 355-364, Purdue University, West Lafayette, IN, September 1988.
120. Fouad, A. A., Y-X. Ni, **V. Vittal**, "Incorporating Excitation Control in the Transient Energy Function Method: Selection of Generators with Exciters," *Proceedings of the 12th IMACS World Congress*, Vol. 3, pp. 114-116, Paris, France, July 1988.
121. **Vittal, V.**, Discussion on "Security: Its Meaning and Objective," *Proceedings of the Workshop on Power System Security Assessment*, pp. 42-48, April 1988.
122. **Vittal, V.**, N. Bhatia, A. A. Fouad, "Investigation of Sparse Network Formulation of the Transient Energy Function (TEF) Method," *Proceedings of the IASTED International Symposium on High Technology in the Power Industry*, pp. 169-173, Scottsdale, Arizona, March, 1988.
123. **Vittal, V.**, S. Rajagopal, A. A. Fouad, M. A. El-Kady, E. Vaahedi, and V. F. Carvalho, "Transient Stability Analysis of Stressed Power Systems Using the Energy Function Method," *Proceedings of the 1987 Power Industry Computer Applications Conference*, pp. 253-258, May 1987. (SCI 1)
124. **Vittal, V.**, A. N. Michel, "A Variational Principle for Non-Conservative Power Systems," *Proceedings of the International Symposium on Circuits and Systems*, Philadelphia, pp. 300-304, May 4-7, 1987.
125. **Vittal, V.**, A. A. Fouad, and P. Kundur, "Determination of Transient Stability-Constrained Plant Generation Limits," *Proceedings of the IFAC Symposium on Automation and Instrumentation for Power Plants*, Bangalore, India, pp. A-8-1 through A-8-5, December 15-17, 1986. (SCI 2)
126. Fouad, A. A., and **V. Vittal**, "Direct Method of Power System Transient Stability: Perspectives of the Analyst and the Practitioner," *Proceedings of The Eighteenth Southeastern Symposium on System Theory*, pp. 355-358, April 1986.
127. Michel, A. N., and **V. Vittal**, "Stability and Security Assessment of a Class of Systems Governed by Lagrange's Equation with Application to Multi-Machine Power Systems," *Proceedings of the 24th IEEE Conference on Decision and Control*, Ft. Lauderdale, Florida, pp. 43-48, December 1985.
128. **Vittal, V.**, T. Oh, and A. A. Fouad, "Correlation of the Transient Energy Margin to the Out-of-Step Relay Operation," *Proceedings of the 1985 Midwest Power Symposium*, pp. II-B-1 through II-B-8. (SCI 1)
129. Michel, A. N., and **V. Vittal**, "On The Mechanism Of Transient Instability Of Power Systems: Improved Results," *Proceedings of the 1985 American Control Conference*, pp. 245-250, June 1985.

130. El-Kady, M. A., C. K. Tang, V. F. Carvalho, A. A. Fouad, and **V. Vittal**, "Dynamic Security Assessment Utilizing The Transient Energy Function Method," *Proceedings of the 1985 Power Industry Computer Applications Conference*, pp. 132-139, 1985. (SCI 5)
131. Michel, A. N., and **V. Vittal**, "Power System Transient Stability Analysis: Lagrangian Formulation," *Proceedings of the 23rd IEEE Conference on Decision and Control*, Las Vegas, Nevada, pp. 167-172, December 1984.
132. Fouad, A. A., and **V. Vittal**, "Power System Response to a Large Disturbance: Energy Associated with System Separation," *Proceedings of the 1983 Power Industry Computer Applications Conference*, pp. 116-122, 1983.
133. Michel, A. N., B. H. Nam, and **V. Vittal**, "Computer Generated Lyapunov Functions for Interconnected Systems: Improved Results with Applications to Power Systems," *Proceedings of the 1983 IEEE Control and Decision Conference*, pp. 509-514, December 1983.
134. **Vittal, V.**, A. N. Michel, and A. A. Fouad, "Power System Transient Stability Analysis: Formulation as Nearly Hamiltonian System," *Proceedings of the 1983 American Control Conference*, San Francisco, CA, pp. 668-673. June 1983. (SCI 1)
135. Michel, A. N., A. A. Fouad, and **V. Vittal**, "Power System Transient Stability Using Individual Machine Energy Functions," *Proceedings of the 1982 IEEE Large Scale Systems Symposium*, October 1982.
136. Pai, M. A., and **V. Vittal**, "Multi-Machine Stability Analysis of Power Systems Using Vector Lyapunov Function with Inertial Center Decomposition," *Proceedings of the Midwest Power Symposium*, October 1981.

Books or Chapters of Books

1. Kezunovic, M., S. Meliopoulos, V. Venkatasubramanian, **V. Vittal**, *Application of Time-Synchronized Measurements in Power System Transmission Networks*, Springer, 2014.
2. **Vittal, V.**, F. Ma, *A Hybrid Dynamic Equivalent Using ANN-Based Boundary Matching Technique*, "Power System Coherency and Model Reduction," pp.91-118, Springer, 2013.
3. **Vittal V.**, R. Ayyanar, *Grid Integration and Dynamic Impact of Wind Energy*, Springer, New York, 2013.
4. T.J. Browne, **V. Vittal**, G.T. Heydt, and A.R. Messina, *Inter-area Oscillations in Power Systems – A Nonlinear and Nonstationary Perspective*, "Practical Application of Hilbert Transform Techniques in Identifying Inter-area Oscillations," pp. 101-126, Springer, 2009. (SCI 3)
5. **Vittal, V.**, *The Electric Power Engineering Handbook*, Second Edition, Power System Stability and Control, L.L. Grigsby, Editor, "Direct Stability Methods," pp. 11-1 – 11-13, CRC Press, Taylor and Francis Group, Boca Raton Florida, 2007.
6. Sauer, P.W., K. L. Tomsovic, **V. Vittal**, *The Electric Power Engineering Handbook*, Second Edition, Power System Stability and Control, L.L. Grigsby, Editor, "Dynamic Security Assessment," pp. 15-1 – 15-10, CRC Press, Taylor and Francis Group, Boca Raton Florida, 2007.
7. **Vittal, V.**, "Emergency Control and Special Protections Systems in Large Electric Power Systems," *Stability and Control of Dynamical Systems with Applications*, pp. 293-313, Birkhäuser, Boston, 2003.
8. **Vittal, V.**, *The Electric Power Engineering Handbook*, L. L. Grigsby, Editor and Chief, "Direct Stability Methods," pp. 11-42 – 11-54, CRC Press, Boca Raton, Florida, 2001.
9. Bergen, A. R., and **V. Vittal**, *Power System Analysis*, Prentice Hall, New Jersey, 2000. (SCI 261)

10. **Vittal, V.**, M. H. Khammash, and C. D. Pawloski, "Robust Stabilization of Controls in Power Systems," *Systems and Control Theory for Power Systems*, The IMA Volumes In Mathematics And Its Application, Vol. 64, pp. 399-413, Springer Verlag, 1995.
11. Fouad, A. A., and **V. Vittal**, *Power System Transient Stability Analysis Using the Transient Energy Function Method*, Prentice Hall, New Jersey, 1992. (SCI 231)
12. Fouad, A. A., and **V. Vittal**, *Control & Dynamic Systems, Advances in Theory and Applications*, C. T. Leondes, Editor, Vol. 43: Analysis and Control System Techniques for Electrical Power Systems, Part 3 of 4. "Power System Transient Stability Assessment Using The Transient Energy Function Method," pp. 115-184, Academic Press, Boston, 1991. (SCI 2)

Research and Technical Reports

1. V. Vittal, M. Khammash, X. Yu, "Robust Analysis and Design of Controls in Power Systems," EPRI Final Report 1001307, January 2001.
2. McCalley, J. D., V. Vittal, M. Ni, S. Greene, A. Phadke, "On-Line Risk-Based Security Assessment," EPRI Final Report 1000411, November 2000.
3. McCalley, J. D., **V. Vittal**, Y. Dai, W. Fu, A. Irizarry-Rivera, V. Van Acker, H. Wan, S. Zhao, "Risk Based Security Assessment," EPRI Final Report TR-113276, July 1999. (SCI 1)
4. **Vittal, V.**, M. H. Khammash, M. Djukanovic, "Robust Analysis and Design of Controls in Power Systems," EPRI Final Report TR-111922, December 1998. (SCI 3)
5. **Vittal, V.**, W. Kliemann, and Y-X. Ni, "Testing Methods for Prediction of Onset of Interarea Split on a Full-Scale Real World Context," Electric Power Research Institute Report TR-108533, September 1997.
6. Fouad, A. A., **V. Vittal**, W. Kliemann, et al., "Nonlinear Power System Behavior Using Normal Forms: Extension of Linear System Analysis via Higher Order Correction," Electric Power Research Institute Report TR-107798, February 1997. (SCI 1)
7. Ejebe, G. C., G. D. Irisarri, **V. Vittal**, A. A. Fouad, et al., "Analytical Methods for Contingency Selection and Ranking for Dynamic Security Analysis," Electric Power Research Institute Report TR-104352, 1994. (SCI 5)
8. Fouad, A. A., **V. Vittal**, W. Kliemann, S. K. Starrett, and C. K. Lin, "Analysis of Stressed Interconnected Power Networks," Electric Power Research Institute Report TR-103704, 1994. (SCI 3)
9. Carvalho, V. F., M. A. El-Kady, E. Vaahedi, P. Kundur, C. K. Tang, G. Rogers, J. Libaque, D. Wong, A. A. Fouad, **V. Vittal**, S. Rajagopal, "Demonstration of Large Scale Direct Analysis of Power System Transient Stability," Electric Power Research Institute Report RP-2206-1, 1986. (SCI 10)
10. Fouad, A. A., **V. Vittal**, Y. X. Ni, H. R. Pota, K. Nodehi, and T. K. Oh, "Extending Applications of the Transient Energy Function Method," Electric Power Research Institute Report RP-2206-5, 1986. (SCI 2)
11. Fouad, A. A., K. C. Kruempel, **V. Vittal**, A. Ghafurian, and K. Nodehi, "Transient Stability Program Output Analysis," Electric Power Research Institute Report EL-4192, August 1985. (SCI 4)
12. Fouad, A. A., **V. Vittal**, K. C. Kruempel, and T. Oh, "Analysis of Loss of Generation Disturbance Using the Transient Energy Function Method," Final Report submitted to Florida Power & Light Co., ISU-ERI-AMES-85217, April 1985.

13. A. A. Fouad, A. A., K. C. Kruempel, K. R. C. Mamandur, M. A. Pai, S. E. Stanton, and **V. Vittal**, "Transient Stability Margin as a Tool for Dynamic Security Assessment," Electric Power Research Institute Report EL-1755, March 1981. (SCI 52)

IX. EXTENSION/OUTREACH ACTIVITIES

1. EE653 Engineering Distance Education Course 2003F.
2. EE553 Engineering Distance Education Course 2001F.
3. "Operation of AC-DC-AC Ties," Lecture at Power System Operator Short Course, Iowa State University, April 2000.
4. Taught a four-hour Professional Engineering refresher course for engineers at IES utilities, 1997 F.
5. EE 577 Video Course, 1990F.
6. EE 578 Video Course, 1990S, 1991S.

X. PATENTS

XI. GRADUATE STUDENTS

Masters Degree Thesis

- | | |
|--|---------------------------------|
| 1. <i>Evaluation and Mitigation of Power System Oscillations Arising from High Solar Penetration</i> | Anushree Pethe (Co-major) |
| 2. <i>Error Detection and Error Correction for PMU Data as Applied to Power System State Estimators</i> | Veerakumar Murugesan (Co-major) |
| 3. <i>Mitigating the Detrimental Impacts of Solar PV Penetration On Electric Power Transmission Systems</i> | Nitin Prakash (Co-Major) |
| 4. <i>Distributed Photovoltaic Generation in Residential Distribution Systems: Impacts on Power Quality and Anti-islanding</i> | Parag Mitra (Co-Major) |
| 5. <i>Effect of Reduced System Inertia Due to Increased Renewable Resource Penetration on Power System Stability</i> | Iknoor Singh |
| 6. <i>Modeling of Air-Conditioner Compressor Single Phase Induction Motor for Transient Analysis</i> | Yuan Liu |
| 7. <i>Transmission Expansion Planning with Large Scale Renewable Resource Integration</i> | Sruthi Hariharan |

8. *Optimal Location and Sizing of Dynamic VArS for Fast Voltage Collapse* Ahmed Salloum
9. *Reliability Evaluation of Demand Response Actions for Electricity Market Operations* Bharathram Rajaraman
10. *Special Protection Schemes Modeling: Dynamic Braking and Generation Rejection Schemes* Inna Kim
11. *Evaluation of Surge Arrester Location Strategies for Transmission Line Lightning Protection* Karthik V N S D Munukutla (Co-Major)
12. *Dynamic Modeling of Fixed Speed Wind Generator with Blade Pitch Control* Sang Su Noh
13. *Voltage Stability Assessment of the Entergy Energy System* Muhammad Randhawa
14. *Online Prediction of Transient Stability Using Decision Trees and Phasor Measurements* Siddharth Likhate
15. *On-Line Monitoring of Sag in Overhead Transmission Lines with Leveled Spans* Poorani Ramachandran
16. *Sensor Network Design for a Secure Electric Energy Infrastructure* Ramon Alberto Leon Candela
17. *Proposing an Innovative Information Architecture for Power Systems with its Modeling and Reliability Analysis* Zhaoxia Xie (Co-Major)
18. *A New Automatic Under-Frequency Load Shedding Scheme* Zhong Yang
19. *Robustness Analysis for Thyristor Controlled Series Compensators In Power Systems and Its Performance Comparison Against Static VAR Compensators* Dede Oke Subakti (Co-Major)
20. *Application of the Normal Form of Vector Fields to Predict Interarea Split Following Large Disturbances in Power Systems* Jyotika Thapar
21. *A Modified Approach to Determine the Controlling*

- UEP in the TEF Method* Jan Heiberg-Anderson
22. *Robust Stabilization of High Voltage Direct Current Controls In a Power System* Sundar Rajan Venkataraman (Co-Major)
23. *Robust Design and Performance of Controls in Power System* Charles Pawloski (Co-Major)
24. *Application of the Transient Energy Function Method to the Northern States Power System* Roger T. Treinen
25. *Sensitivity Analysis of the Transient Energy Function Method with Excitation Control* Vamsi Krishna Chadalavada
26. *Incorporation of the Modal Interactions in Stressed Power Systems Using the Transient Energy Function Method* Bhaskar Ray
27. *A Parallel Computer Implementation of Power System Transient Stability Assessment Using the Transient Energy Function Method* Swee Lian Lim
28. *Sensitivity Analysis of the Transient Energy Function Method: Using A Second Order Analytic Technique* Romeo D'souza
29. *Approximation of Dissipation Terms in the Transient Energy Function* Hwang-Chi Shih
30. *Determination of Transient Stability-Constrained Line Flow Limits: An Application of Linearized Techniques to the Transient Energy Function Method* Jolene L.Gleason, (Moore)
31. *Sparse Network Formulation of the TEF Method* Neelu Gopal Bhatia

Ph.D. Degree Dissertations

1. *Load Sensitivity Studies and Contingency Analysis in Power Systems* Parag Mitra
2. *Representation of Vector-Controlled Induction Motor Drive Load in Electro-Magnetic Transient and Positive Sequence Transient Stability Simulations* Yuan Liu
3. *Enhanced Power System Operational Performance with Anticipatory Control Under Increased Penetration of Wind Energy* David Ganger (Co-Major)

4. *Improved Optimal Decision-Making Process in Distribution Systems: Enable Grid Integration of Photovoltaic Resources and Distributed Energy Storage* Qifeng Li
5. *Electromagnetic Transient and Electromechanical Transient Stability Hybrid Simulation: Design, Development and its Applications* Qiuhua Huang
6. *Impacts of Base-Case and Post –Contingency Constraint Relaxations on Static and Dynamic Operational Security* Ahmed Salloum (Co-Major)
7. *Real-Time Power System Topology Monitoring Supported by Synchrophasor Measurements* Trevor Nelson Werho
8. *Improved Power Grid Resiliency Through Interactive System Control* Song Zhang
9. *Transmission Expansion Planning for Large Power Systems* Hui Zhang (Co-Major)
10. *A Data Analytics Framework for Smart Grids: Spatio-temporal Wind Power Analysis and Synchrophasor Data Mining* Miao He (Co-Major)
11. *The Impact of Increased Penetration of Photovoltaic Generation On Smart Grids* Sara Eftekharnajad (Co-Major)
12. *Probabilistic Power Flow Studies to Examine the Influence of Photovoltaic Generation on Transmission System Reliability* Miao Fan
13. *Analysis of Synchronization and Accuracy of Synchrophasor Measurement* Qing Zhang (Co-Major)
14. *Trajectory Sensitivity Based Power System Dynamic Security Assessment* Guanji Hou
15. *Improved Coherency-Based Dynamic Equivalents* Feng Ma
16. *Transmission System Restoration Strategies in Real Time* Chong Wang
17. *Impact of Increased Penetration of DFIG Based Wind Turbine Generators on Rotor Angle Stability of Power Systems* Durga Gautam
18. *Controlled Islanding Algorithms and Demonstration on the WECC System* Guangyue Xu
19. *Voltage Stability Assessment and Enhancement of a Large*

- | | |
|--|---------------------------|
| <i>Power System Using Static and Dynamic Approaches</i> | Bishnu Prasad Sapkota |
| 20. <i>Power System Online Stability Assessment Using Synchronized Phasor Measurements and Decision Trees</i> | Ruisheng Diao |
| 21. <i>Mechanical State Estimation of Transmission Line Sag Using Tilt Sensors</i> | Sunita Vikas Malhara |
| 22. <i>Slow Coherency Based Graph Theoretic Islanding Strategy</i> | Bo Yang |
| 23. <i>Distributed State Estimation</i> | Weiqing Jiang |
| 24. <i>Damping controller design for FACTS Devices in Power Systems using novel control techniques</i> | Qian Liu (Co-Major) |
| 25. <i>Assessing Placement of Controllers and Nonlinear Behavior of Electrical Power System using Normal Form Information</i> | Shu Liu |
| 26. <i>Transmission System Reconfiguration for Corrective Control</i> | Wei Shao |
| 27. <i>Slow Coherency Grouping Based Islanding Using Minimal Cutsets and Generator Coherency Index Tracing Using Continuation Method</i> | Xiaoming Wang |
| 28. <i>Power System Security Enhancement through Direct Non-disruptive Load Control</i> | Badri Ramanathan |
| 29. <i>Application of Linear Parameter Varying Control Synthesis in Power Systems</i> | Wenzheng Qiu (Co-Major) |
| 30. <i>Self-healing in Power Systems: An Approach Using Islanding and Rate of Frequency Based Load Shedding</i> | Haibo You |
| 31. <i>Robustness Analysis for Power Systems Based on the Structured Singular Value Tools and the ν Gap Metric</i> | Chuanjiang Zhu (Co-Major) |
| 32. <i>Analyzing Dynamic Performance of Power Systems over Parameter Space Using the Method of Normal Forms of Vector Fields</i> | Songzhe Zhu |
| 33. <i>Robustness Analysis and Controller Design for Static VAR Compensators in Power Systems</i> | Xuechun Yu (Co-Major) |
| 34. <i>Risk-based Security Assessment for Operating Electric Power Systems</i> | Hua Wan (Co-major) |

35. *Investigation and Visualization of the Stability Boundary for Stressed Power Systems* Rong Qi
36. *Nonlinear Control Design for Stressed Power Systems Using Normal Forms of Vector Fields* Gilsoo Jang
37. *Analysis and Synthesis of Nonlinear Control Systems* Shan Lin (Co-Major)
38. *Contingency Filters for Dynamic Security Assessment Using the Transient Energy Function* Vamsi K. Chadalavada
39. *An Improved Technique to Determine the Controlling Unstable Equilibrium Point in a Power System* Roger Treinen
40. *Sensitivity Analysis of the Transient Energy Function Method* Chiu Hwang
41. *Incorporation of Nonlinear Load Models and Identification of the Inter-Area Mode Phenomenon in the Transient Energy Function Method* Neelu Gopal Bhatia
42. *Application of the Transient Energy Function Method to Stressed Large-Scale Power Systems* Sankaran Rajagopal (Co-Major)
43. *Correlation of the Transient Energy Margin to Out-of-Step Impedance Relay Operation* Tae-Kyoo Oh (Co-Major)

XII. PROFESSIONAL SOCIETIES AND COMMITTEES

2015-	Secretary	IEEE Power and Energy Society Technical Council
2006-08	Chair	IEEE Power Engineering Education Committee
2005-11	Editor in Chief	IEEE Transactions on Power Systems
2004-06	Vice President for Education and Industry Relations	IEEE Power Engineering Society
2004-06	Vice Chair	IEEE Power Engineering Education Committee
2002-04	Secretary	IEEE Power Engineering Education Committee
2001-05	Editor	IEEE Transactions on Power Systems
2000	Tech. Program Chair	IEEE PES 2001 Summer Power Meeting
2000-02	Chair	IEEE System Dynamic Performance Committee
	Chair	IEEE Power Engineering Education Research Subcommittee
1998	Secretary	IEEE System Dynamic Performance Committee
	Vice Chair	IEEE Power Engineering Education Research Subcommittee
1997-	Fellow	Institute of Electrical and Electronics Engineers (IEEE)
	Chair	IEEE Technical Working Group on Stability Test System

	Member	IEEE Technical Task Force on System Oscillations
1996	Secretary	IEEE System Dynamic Performance Committee
	Secretary	IEEE Power Engineering Education Research Subcommittee
1992-	Member	IEEE System Dynamic Performance Subcommittee
1992-	Member	IEEE Computer and Analytical Methods Subcommittee
1992-	Member	Eta Kappa Nu
1982-	Member	Sigma Xi

XIII. UNIVERSITY ACTIVITIES

University Committees

1. 2003-2004 College of Engineering Dean Search Committee – Iowa State University

College Committees

Arizona State University

1. 2014 - ECEE Personnel Committee
2. 2005-2011 Dean's Personnel Advisory Committee

Iowa State University

1. 2001 –2003 College of Engineering Promotion & Tenure Committee, Chair in 2003
2. 1997-2000 College of Engineering Promotion & Tenure Committee
3. 1995 DEO Search Committee
4. 1990-1993 College Research Grants Committee
5. 1989 DEO Search Committee
6. 1988 Dean's Review Committee/EECPe

Departmental Committees

Arizona State University

1. 2005 - 2007 Graduate Committee
2. 2014 - Personnel Committee

Iowa State University

1. 2003 Chair, Departmental Strategic Planning Committee
2. 2003 Chair, Faculty Search Committee
3. 2001-2003 Director of Graduate Education, Associate Chair
4. 2001 Chair, Faculty Search Committee
5. 2000-2003 Promotion and Tenure Committee
6. 1997-1999 Chair, Faculty Search Committee

- | | |
|------------------|---|
| 7. 1995-1996 | Promotion and Tenure Committee |
| 8. 1995 | Workload Committee |
| 9. 1992, 1994-96 | Organized Distinguished Lecture Series |
| 10. 1991-1993 | Promotion and Tenure Committee |
| 11. 1991-1992 | Organized Midwest Electro Technology Conference |
| 12. 1989 | Power Area Subcommittee |
| 13. 1989-present | Circuits & Systems Area Subcommittee |
| 14. 1989-present | Graduate Committee |
| 15. 1989 | Graduate Application Review |
| 16. 1989 | Endowment Advisory Board |

XIV. OTHER INFORMATION

NSF Coalition Activities: Have actively participated in the NSF Synthesis Coalition in two projects:

1. Development of three videotapes on the generation subsystem, transmission subsystem, and distribution subsystem. These videotapes are now being used at a number of schools: Arizona State University, Cornell University, Memorial University of Newfoundland, Canada, Drexel, and Montana State University.
2. Development of a visualization program for the power flow. The videotapes have been shown at various coalition schools.

National and International Level Activities:

1. Invited Speaker at Tsinghua University, China EPRI, North China Electric Power University, Xian Jiao Tong University, Zhejiang University, Hong Kong University, Korea University, Korea Power Exchange, and Korea Electric Power Company, June 2007.
2. Department Colloquium, "Slow Coherency Based Islanding," Department of Electrical Engineering, University of Washington, March 2007.
3. Invited Seminar "Structured Singular Value Based Analysis and Synthesis of PSS," Department of Electrical Engineering, Arizona State University, February 2003.
4. Invited Speaker at Tsinghua University, Shanghai Jia Tong University, and Hong Kong University, May 2002.
5. Co-organized a national workshop sponsored by NSF workshop on "Future Directions for Complex Interactive Electric Networks," November 2000.
6. Panel Session speaker on "New Methods of Linear Analysis," at the 1998 IEEE PES Summer Power Meeting, San Diego, CA, July 1998.
7. Panel Session speaker on "Risk Based Security Assessment," at 1999 IEEE PES Summer Power Meeting, Edmonton, Canada, July 1999.
8. Panel Session speaker on "Fast Dynamic Security Assessment," at the 1997 IEEE PES Summer Power Meeting, Berlin, Germany, July 1997.
9. Presentation on Calculation of Available Transmission Capability, at the NSF Workshop, University of Illinois, Urbana-Champaign, June 1997.
10. Plenary Session speaker on Infrastructure Issues in Power Systems, at the NSF Workshop, Washington State University, Pullman, WA, October 1994.

11. Panel presentation, "Multi-Media and its Use in Power Engineering Education," 1993 IEEE, PES Winter Power Meeting, Columbus, OH, January 31 - February 5, 1993.
12. Chaired and organized a panel session on the Potential Impact of Supercomputers on Power System Analysis at the 1992 IEEE PES Winter Power Meeting, New York, NY, 1992.