

## *Curriculum Vitae*

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### **Kai Sun**

Associate Professor

University of Tennessee, Knoxville  
Department of Electrical Engineering & Computer Science  
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### **RESEARCH INTERESTS:**

Modeling, stability, dynamics and control of interconnected power grids and other complex nonlinear systems.

### **EDUCATION**

- Jun 2004      Ph.D. in Control Science and Engineering, Tsinghua University, Beijing, China  
Dissertation: “An OBDD-based Three-phase Method for Searching for Splitting Strategies of Large-scale Power Networks against Blackouts”  
Advisor: Prof. Da-Zhong Zheng
- Dec 2001      M.S. in Control Science and Engineering, Tsinghua University, Beijing, China  
Thesis: “Modeling and Analysis of Power Systems Real-power Regulation Based on Hybrid Systems Theory”  
Advisor: Prof. Da-Zhong Zheng
- Jun 1999      B.S. in Control Science and Engineering, Tsinghua University, Beijing, China

### **PROFESSIONAL EXPERIENCE**

- Aug 2017-Present      **Tenured Associate Professor**, University of Tennessee, Knoxville, TN, USA
- Department of Electrical Engineering & Computer Science
  - CURENT - Center for Ultra-Wide-Area Resilient Electric Energy Transmission Networks (affiliated faculty)
- Aug 2012-Jul 2017      **Assistant Professor** University of Tennessee, Knoxville, TN, USA
- Department of Electrical Engineering & Computer Science
  - CURENT - Center for Ultra-Wide-Area Resilient Electric Energy Transmission Networks (affiliated faculty)
- Aug 2012-Dec 2014      **Consulting Employee**, Electric Power Research Institute (EPRI), Knoxville, TN, USA
- Jun 2007-Jul 2012      **Project Manager**, Electric Power Research Institute (EPRI), Palo Alto, CA, USA
- Grid Operations, Planning and Renewable Integration Programs in the Power Delivery & Utilization Department

- Dec 2006-May 2007 **Research Associate**, Arizona State University, Tempe, AZ, USA
- Department of Electrical Engineering (Supervisor: Prof. Vijay Vittal)
  - PSEC - Power Systems Engineering Research Center (affiliated)
- Jan 2015-Dec 2015 **Postdoctoral Fellow**, University of Western Ontario, London, ON, Canada
- Department of Electrical & Computer Engineering (Supervisor: Prof. Tarlochan S. Sidhu)

## AWARDS

- 2016 **NSF CAREER Award** for “Integrated Research and Education in Nonlinear Modal Decoupling and Control for Resilient Interconnected Power Systems”
- 2016 **Professional Promise in Research Award** by the College of Engineering, University of Tennessee - Knoxville
- 2016 **Most Valuable Players Award** of NASPI (North American Synchrophasor Initiative) Control Room Solution Task Team for “Development of the Online Test Cases Library on Oscillation Source Location” by U.S. Department of Energy.
- 2015 **Best Papers Award** by IEEE PES General Meeting for paper “Application of Adomian Decomposition for Multi-Machine Power System Simulation”
- 2014 **Best Papers Award** by IEEE PES General Meeting for paper “A New Approach to Optimization of Dynamic Reactive Power Sources Addressing FIDVR Issues”
- 2012 **EPRI Performance Recognition Award** “for diligence in supporting transmission efficiency projects with Con Edison by developing computational tool for optimal schedule of reactive power and voltage control”
- 2009 **EPRI Chauncey Award, the highest annual EPRI award**, for contributions in “Advanced Tools for Reliable Operation and Robust Planning”
- 2008 **EPRI Technology Innovation Excellence Award** for “establishing EPRI as a thought leader in cascading failures of power grids and creating a new project set for the ‘Grid Operation’ Program in Power Delivery and Utilization Sector”
- 2006 **“100 Best PhD Dissertations of China” Award** for dissertation “An OBDD-based Three-phase Method for Searching for Splitting Strategies of Large-scale Power Networks against Blackouts” by the Ministry of Education of China

## GRANTS

University of Tennessee (total: \$2.20M)

<u>Years</u>	<u>Funder</u>	<u>Title/Description</u>	<u>PI/co-PI</u>	<u>Amount</u>
2016-2021	NSF	CAREER Award: Integrated Research and Education in Nonlinear Modal Decoupling and Control for Resilient Interconnected Power Systems (ECCS-1553863)	PI	\$500,000
2016-2019	NSF	A Semi-Analytical Framework for Faster Deterministic and Stochastic Power System Simulations (ECCS-1610025)	PI	\$303,863

2017-2018	GEIRI N.A. Inc.	PMU-Based Voltage Stability Monitoring and Control	PI	\$70,351
2015-2016	Eleon Energy Inc.	Parallel Power System Restoration	PI	\$30,000
2015-2016	eMIT, LLC	A New Method for User-friendly Electromagnetic Transient Simulation Modeling	PI	\$46,421
2015-2018	ORNL	Implementation of Parareal in Time Power System Simulation on HPC	PI	\$161,806
2013-2016	ORNL	Optimal Dynamic VAR Management Involving Renewables against Voltage Security Issues	PI	\$172,714
2013-2014	NEC Labs	Novel Control Techniques for Enhancement of Microgrid Stability in the Islanded Mode	PI	\$60,000
2013-2014	EPRI	Under Voltage Load Shedding to Prevent Voltage Collapse	PI	\$49,183
2012-2014	DOE	High-Performance Hybrid Simulation/ Measurement Based Tools for Proactive Operator Decision Support: Measurement-based Stability Assessment Tool (DE-OE0000628; EPRI subcontract)	PI	\$350,618
2012-2019	NSF	ERC: Center for Ultra-wide Area Resilient Electric Energy Transmission Network (CURENT; EEC-1041877)	Co-PI	\$455,666

### Electric Power Research Institute (external federal grants: \$0.95M)

<u>Years</u>	<u>Funder</u>	<u>Title</u>	<u>PI/co-PI</u>	<u>Amount</u>
2010-2013	DOE	Development and Demonstration of a Synchrophasor-based Voltage Stability Monitoring Tool (DE-OE0000375; under Entergy subcontract)	PI	\$214,429
2007-2012	DOE	Demonstration of a Novel Synchrophasor-based Situational Awareness System (DE-OE0000128)	PI	\$750,000

### TEACHING

#### *University of Tennessee, Knoxville*

- *ECE 325 - Electric Energy System Components*: Fall 2015, Fall 2016
- *ECE 421 - Electric Energy Systems*: Fall 2013, Fall 2014, Fall 2017
- *ECE 422 - Power System Operations & Planning*: Spring 2014, Spring 2015
- *ECE 521 - Power Systems Analysis I*: Fall 2013
- *ECE 522 - Power Systems Analysis II*: Spring 2013, Spring 2014, Spring 2017
- *ECE 620 - Ultra-wide-area Resilient Electrical Energy Transmission Networks*: Fall 2016, Fall 2017
- *ECE 692 - Advanced Topics on Power System Stability*: Spring 2016

#### *Stanford University*

- Guest lecturer for *EE392N - Intelligent Energy Systems*: Spring 2012

**ALUMNI (MAJOR ADVISOR)**

1. Nan Duan, Ph.D. in EE, November 2017

Dissertation: *Towards Faster-than-real-time Power System Simulation Using a Semi-analytical Approach and High-performance Computing*

2. Bin Wang, Ph.D. in EE, October 2017

Dissertation: *Nonlinear Oscillation Analysis and Modal Decoupling for Power Systems*

3. Weihong Huang, M.S. & Ph.D. in EE, December 2014 and October 2017

Thesis: *A New Approach to Optimization of Dynamic Reactive Power Sources Addressing FIDVR Issues*

Dissertation: *Optimal Allocation of Dynamic Var Sources Addressing FIDVR Issues*

4. Fengkai Hu (now with Siemens Industry, USA), Ph.D. in EE, July 2016

Dissertation: *Real-time Voltage Stability Monitoring and Control for Load Areas: A Hybrid Approach*

5. Hira Amna Saleem (now with Shell, Pakistan), M.S. in EE, May 2014

Thesis: *Microgrid Modeling and Grid Interconnection Studies*

**CURRENT GRADUATE STUDENTS**

- |                 |               |                           |
|-----------------|---------------|---------------------------|
| 1. Yongli Zhu   | Ph.D. student | Spring 2014 – Summer 2018 |
| 2. Denis Osipov | Ph.D. student | Spring 2014 – Summer 2018 |
| 3. Wenyun Ju    | Ph.D. student | Fall 2014 – Summer 2018   |
| 4. Xin Xu       | Ph.D. student | Fall 2016 – Present       |
| 5. Yang Liu     | Ph.D. student | Spring 1017 – Present     |
| 6. Tianwei Xia  | Ph.D. student | Fall 2017 – Present       |

**ADVISED POSTDOCRATES**

1. Dr. Miao Fan (now with Siemens Industry, USA), 2013
2. Dr. Junjian Qi (now Assistant Professor with University of Central Florida), 2013-2015
3. Dr. Rui Yao, 2016 - Present
4. Dr. Chengxi Liu, 2016 - Present

**PROFESSIONAL ACTIVITIES**

2013 - Present **IEEE senior member**

2016 - Present **Sigma Xi member**

2012 - Present **Editor** of *IEEE Transactions on Smart Grid*

- 2017 - Present **Guest Editor** of *IEEE Transactions on Power Systems* (special section: Enabling Very High Penetration Renewable Energy Integration into Future Power Systems)
- 2017 - Present **Associate Editor** of *Journal of Modern Power Systems and Clean Energy* since 2017
- 2016 - Present **Associate Editor** of *IET Generation, Transmission & Distribution*
- 2015 - Present **Editor** of *Protection and Control of Modern Power Systems*

## **PATENTS**

1. Nan Duan, **Kai Sun**, “Transient Stability Simulation and Operation of Power Systems,” US Patent Application, No. 14/956,076, filed in Dec. 2015.
2. **Kai Sun**, Kyeon Hur, Pei Zhang, “Application of Phasor Measurement Units (PMU) for Controlled System Separation,” US Patent No. 8/606,422, issued in Dec. 2013 (Taiwan Patent No. I426677, Feb. 2014).
3. **Kai Sun**, Qiang Zhou, “Application of Phase-Locked Loop (PLL) in Oscillation Monitoring for Interconnected Power Systems,” US Patent No. 13/280,458, issued in April 2013.
4. Qianchuan Zhao, **Kai Sun**, Da-Zhong Zheng, Jin Ma, Qiang Lu, “Solution to Preventing Power Systems from Collapse in Case of Catastrophe,” Chinese Patent No. 03122884, issued in May 2003.

## **PUBLICATIONS** (GoogleScholar H-index: 20, I10-index: 40)

(\*): mentored graduate co-author;

(#): mentored postdoctoral co-author;

(*Corresponding author*): the paper of which I am the senior author leading and approving the research.

### **Book**

1. **Kai Sun**, Yunhe Hou, Wei Sun, Junjian Qi, *Power System Control under Cascading Failures: Understanding and Mitigation of Cascading Failures and System Restoration*, Wiley-IEEE Press, 2017. ISBN: 978-1-119-28202-0

### **Book Chapters**

2. **Kai Sun**, “Measurement-based Voltage Stability Assessment Techniques,” *Standard Handbook for Electrical Engineers* (17<sup>th</sup> edition), McGraw-Hill, 2018. ISBN: 978-1-259-64258-6
3. **Kai Sun**, Fengkai Hu (\*), “Measurement-based Voltage Stability Monitoring for Load Areas,” *Application of Smart Grid Technologies: case studies in saving electricity in different parts of the world*, Elsevier, 2018. ISBN: 978-0-128-03128-5
4. **Kai Sun**, “WAMS Based Controlled System Separation to Mitigate Cascading Failures in Smart Grid,” *Smart Grid Control: Opportunities and Research Challenges*, Springer, 2017.

### **Published/Accepted Refereed Journal Papers (total: 47):**

#### **2017**

5. Rui Yao (#), **Kai Sun**, Feng Liu, Shengwei Mei, “Management of Cascading Outage Risk Based on Risk Gradient and Markovian Tree Search,” *IEEE Transactions on Power Systems*, Early Access at IEEEExplore. (*Corresponding author*)

6. Chengxi Liu (#), Bin Wang (\*), Fengkai Hu (\*), **Kai Sun**, Claus Leth Bak, "Online Voltage Stability Assessment for Load Areas Based on the Holomorphic Embedding Method," *IEEE Transactions on Power Systems*, Early Access at IEEExplore. (Corresponding author)
7. Yongli Zhu (\*), Chengxi Liu (#), Bin Wang (\*), **Kai Sun**, "Damping Control for a Target Oscillation Mode Using Battery Energy Storage," *Journal of Modern Power Systems and Clean Energy*, Accepted. (Corresponding author)
8. Junjian Qi (#), Jianhui Wang, **Kai Sun**, "Efficient Estimation of Component Interactions for Cascading Failure Analysis by EM Algorithm," *IEEE Transactions on Power Systems*, Early Access at IEEExplore.
9. Chengxi Liu (#), Bin Wang (\*), Xin Xu (\*), **Kai Sun**, Di Shi, Claus Leth Bak, "A Multi-Dimensional Holomorphic Embedding Method to Solve AC Power Flows," *IEEE Access*. Early Access at IEEExplore. (Corresponding author)
10. Rui Yao (#), **Kai Sun**, Feng Liu, Shengwei Mei, "Efficient Simulation of Temperature Evolution of Overhead Transmission Lines Based on Analytical Solution and NWP," *IEEE Transactions on Power Delivery*, Early Access at IEEExplore. (Corresponding author)
11. Bin Wang (\*), Chengxi Liu (#), **Kai Sun**, "Multi-Stage Holomorphic Embedding Method for Calculating the Power-Voltage Curve," *IEEE Transactions on Power Systems*, Early Access at IEEExplore. (Corresponding author)
12. Weihong Huang (\*), **Kai Sun**, Junjian Qi (#), Jiaxin Ning, "Optimal Allocation of Dynamic Var Sources Using the Voronoi Diagram Method Integrating Linear Programming," *IEEE Transactions on Power Systems*, vol. 32, No. 6, pp. 4644-4655, Nov. 2017. (Corresponding author)
13. Daham Min, Seog-joo Kim, Sangsoo Seo, Young-Hwan Moon, **Kai Sun**, Joe H. Chow, Kyeon Hur, "Computing Safety Margins of a Generation Rejection Scheme: A Framework for Online Implementation," *IEEE Transactions on Smart Grid*, , Early Access at IEEExplore.
14. Junjian Qi (#), **Kai Sun**, Jianhui Wang, Hui Liu, "Dynamic State Estimation for Multi-Machine Power System by Unscented Kalman Filter with Enhanced Numerical Stability," *IEEE Transactions on Smart Grid*, Early Access at IEEExplore.
15. Tao Ding, **Kai Sun**, Can Huang, Zhaohong Bie, Fangxing Li, "Mixed Integer Linear Programming-based Splitting Strategies for Power System Islanding Operation Considering Network Connectivity," *IEEE Systems Journal*, Early Access at IEEExplore.
16. Fengkai Hu (\*), **Kai Sun**, Di Shi, Zhiwei Wang, "Measurement-based Voltage Stability Assessment for Load Areas Addressing n-1 Contingencies," *IET Generation, Transmission & Distribution*, vol. 11, No. 15, pp. 3731-3738, Oct. 2017. (Corresponding author)
17. Amir Golshani, Wei Sun, **Kai Sun**, "An advanced power system partitioning method for fast and reliable restoration: towards a self-healing power grid," *IET Generation, Transmission & Distribution*, Early Access at IET Digital Library.
18. Weihong Huang (\*), **Kai Sun**, Junjian Qi (#), Jiaxin Ning, "Optimization of Dynamic Reactive Power Sources Using Mesh Adaptive Direct Search," *IET Generation, Transmission & Distribution*, Early Access at IEEExplore. (Corresponding author)
19. Rui Yao (#), Shaowei Huang, **Kai Sun**, Feng Liu, Xuemin Zhang, Shengwei Mei, Wei Wei, Lijie Ding, "Risk Assessment of Multi-timescale Cascading Outages based on Markovian Tree Search," *IEEE Transactions on Power Systems*, vol. 32, No. 4, pp. 2887 - 2900, July 2017.
20. Wenyun Ju (\*), **Kai Sun**, Junjian Qi, "Multi-Layer Interaction Graph for Analysis and Mitigation of Cascading Outages," *IEEE Journal on Emerging and Selected Topics in Circuits and Systems*, vol. 7, No. 2, pp. 239-249, June 2017. (Corresponding author)

21. Tao Ding, **Kai Sun**, Qingrun Yang, Abdul Wahab Khan, Zhaohong Bie, “Mixed Integer Second Order Cone Relaxation with Dynamic Simulation for Proper Power System Islanding Operations,” *IEEE Journal on Emerging and Selected Topics in Circuits and Systems*, vol. 7, No. 2, pp.295-306, June 2017
22. Junjian Qi (#), Wenyun Ju (\*), **Kai Sun**, “Estimating the Propagation of Interdependent Cascading Outages with Multi-Type Branching Processes,” *IEEE Transactions on Power Systems*, vol. 32, No. 2, pp. 1212-1223, March 2017. (*Corresponding author*)
23. Bin Wang (\*), Xiaowen Su, **Kai Sun**, “Properties of the Frequency-Amplitude Curve,” *IEEE Transactions on Power Systems*, vol. 32, No. 1, pp. 826-827, January 2017. (*Corresponding author*)
24. Bin Wang (\*), **Kai Sun**, “Location Methods of Oscillation Sources in Power Systems: A Survey,” *Journal of Modern Power Systems and Clear Energy*, vol. 5, No. 2, pp. 151-159, 2017. (*Corresponding author*)
25. Nan Duan (\*), **Kai Sun**, “Power System Simulation Using the Adomian Decomposition Method,” *IEEE Transactions on Power Systems*, vol. 32, no. 1, pp. 430-441, January 2017. (*Corresponding author*)
26. Junjian Qi (#), Weihong Huang (\*), **Kai Sun**, Wei Kang, “Optimal Placement of Dynamic Var Sources by Using Empirical Controllability Covariance,” vol. 32, no. 1, pp. 240-249, January 2017. (*Corresponding author*)
27. Huimin Gao, Xiaogao Xie, Jianmin Zhang, Chenxi Wu, **Kai Sun**, “Second-order oscillation mode study of hydropower system based on linear elastic model and modal series method,” *International Transactions on Electrical Energy Systems*, vol. 27, No. 1, January 2017 (DOI: 10.1002/etep.2233).

## 2016

28. Feifei Bai, Yong Liu, Yilu Liu, **Kai Sun**, Navin Bhatt, Alberto Del Rosso, Evangelos Farantatos and Xiaoru Wang, “A measurement-based approach for power system instability early warning,” *Protection and Control of Modern Power Systems*, pp. 1-4, 2016 (DOI:10.1186/s41601-016-0014-0).
29. Bin Wang (\*), **Kai Sun**, “Formulation and Characterization of Power System Electromechanical Oscillations,” *IEEE Transactions on Power Systems*, vol. 61, no. 6, pp. 5082-5093, November 2016. (*Corresponding author*)
30. Fengkai Hu (\*), **Kai Sun**, Alberto Del Rosso, Evangelos Farantatos, Navin Bhatt, “Measurement-Based Real-Time Voltage Stability Monitoring for Load Areas,” *IEEE Transactions on Power Systems*, vol. 31, no. 4, pp. 2787 – 2798, July 2016. (*Corresponding author*)
31. **Kai Sun**, Junjian Qi (#), Wei Kang, “Observability and Dynamic State Estimation for Power System Stability Monitoring Using Synchrophasors,” *Control Engineering Practice*, vol. 53, pp. 160–172, August 2016. (*Corresponding author*)
32. Rui Yao (#), Shaowei Huang, **Kai Sun**, Feng Liu, Xuemin Zhang, Shengwei Mei, “A Multi-timescale Quasi-Dynamic Model for Simulation of Cascading Outages,” *IEEE Transactions on Power Systems*, vol. 31, no. 4, pp. 3189 – 3201, July 2016.
33. Feifei Bai, Lin Zhu, Yilu Liu, Xiaoru Wang, **Kai Sun**, Yiwei Ma, Mahendra Patel, Evangelos Farantatos, Navin Bhatt, “Design and Implementation of a Measurement-based Adaptive Wide-Area Damping Controller Considering Time Delays,” *Electric Power Systems Research*, vol. 130, pp. 1-9, January 2016.

## 2015

34. Feifei Bai, Yong Liu, Yilu Liu, **Kai Sun**, Navin Bhatt, Alberto Del Rosso, Evangelos Farantatos, Xiaoru Wang, “Measurement-Based Correlation Approach for Power System Dynamic Response Estimation,” *IET Generation, Transmission & Distribution*, vol. 9, no. 12, pp. 1474-1484, Sep. 2015.
35. Yong Liu, **Kai Sun**, Yilu Liu, “A Measurement-based Power System Model for Dynamic Response Estimation and Instability Warning,” *Electric Power Systems Research*, vol. 124, pp. 1-9, 2015.

36. Junjian Qi (#), **Kai Sun**, Wei Kang, “Optimal PMU Placement for Power System Dynamic State Estimation by Using Empirical Observability Gramian,” *IEEE Transactions on Power Systems*, vol. 30, pp. 2041-2054, July 2015. (*Corresponding author*)
37. Junjian Qi (#), **Kai Sun**, Shengwei Mei, “An Interaction Model for Simulation and Mitigation of Cascading Failures,” *IEEE Transactions on Power Systems*, vol. 30, no. 2, pp. 804-819, March 2015. (*Corresponding author*)

#### 2014 and before

38. Chengxi Liu, **Kai Sun**, Zakir Hussain Rather, Zhe Chen, Claus Leth Bak, Paul Thøgersen, Per Lund, “A Systematic Approach for Dynamic Security Assessment and the Corresponding Preventive Control Scheme Based on Decision Trees,” *IEEE Transactions on Power Systems*, vol. 29, no. 2, pp. 717-730, March 2014.
39. **Kai Sun**, Qiang Zhou, Yilu Liu, “A Phase Locked Loop-based Approach to Real-time Modal Analysis on Synchrophasor Measurements,” *IEEE Transactions on Smart Grid*, vol. 5, no. 1, pp. 260-269, Jan. 2014. (*Corresponding author*)
40. **Kai Sun**, Kyeon Hur, Pei Zhang, “A New Unified Scheme for Controlled Power System Separation Using Synchronized Phasor Measurements,” *IEEE Transactions on Power Systems*, vol. 26, no. 3, pp. 1544-1554, Aug. 2011. (*Corresponding author*)
41. Chong Wang, Vijay Vittal, **Kai Sun**, “OBDD-Based Sectionalizing Strategies for Parallel Power System Restoration,” *IEEE Transactions on Power Systems*, vol. 26, no. 3, pp. 1426-1433, Aug. 2011.
42. Yunhe Hou, Chen-Ching Liu, **Kai Sun**, Pei Zhang, Shanshan Liu, Dean Mizumura, “Computation of Milestones for Decision Support during System Restoration,” *IEEE Transactions on Power Systems*, vol. 26, no. 3, pp. 1399 – 1409, Aug. 2011.
43. **Kai Sun**, Stephen T. Lee, Pei Zhang, “An Adaptive Power System Equivalent for Real-time Estimation of Stability Margin using Phase-Plane Trajectories,” *IEEE Transactions on Power Systems*, vol. 26, pp. 915-923, May 2011. (*Corresponding author*)
44. Ruisheng Diao, **Kai Sun**, Vijay Vittal, Robert J. O’Keefe, Michael R. Richardson, Navin Bhatt, Dwayne Stradford, Sanjoy K. Sarawgi, “Decision Tree-Based Online Voltage Security Assessment Using PMU Measurements,” *IEEE Transactions on Power Systems*, vol. 24, pp. 832-839, May 2009.
45. **Kai Sun**, Siddharth Likhate, Vijay Vittal, V. Sharma Kolluri, Sujit Mandal, “An Online Dynamic Security Assessment Scheme using Phasor Measurements and Decision Trees,” *IEEE Transactions on Power Systems*, vol. 22, pp. 1935-1943, Nov 2007.
46. Ming Jin, Tarlochan S. Sidhu, **Kai Sun**, “A New System Splitting Scheme Based on the Unified Stability Control Framework,” *IEEE Transactions on Power Systems*, vol. 22, pp. 433-441, Feb 2007.
47. **Kai Sun**, Da-Zhong Zheng, Qiang Lu, “Searching for Feasible Splitting Strategies of Controlled System Islanding,” *IEE Proceedings Generation, Transmission & Distribution*, vol. 153, pp. 89-98, Jan 2006.
48. **Kai Sun**, Da-Zhong Zheng, Qiang Lu, “A Simulation Study of OBDD-based Proper Splitting Strategies for Power Systems under Consideration of Transient Stability,” *IEEE Transactions on Power Systems*, vol. 20, pp. 389-399, Feb 2005.
49. Qianchuan Zhao, **Kai Sun**, Da-Zhong Zheng, Jin Ma, Qiang Lu, “A Study of System Splitting Strategies for Island Operation of Power System: A Two-phase Method Based on OBDDs,” *IEEE Transactions on Power Systems*, vol.18, pp.1556-1565, Nov 2003.
50. **Kai Sun**, Da-Zhong Zheng, Qiang Lu. “Splitting Strategies for Islanding Operation of Large-scale Power Systems Using OBDD-based Methods,” *IEEE Transactions on Power Systems*, vol.18, pp. 912-923, May 2003.



51. **Kai Sun**, Qianchuan Zhao, Da-Zhong Zheng, “A Hybrid Control for Autonomous Systems of Electric Power Supply,” *Journal of Control Theory and Applications*, vol. 19, pp. 23-28, Feb 2002.

**Invited Magazine Paper:**

52. **Kai Sun**, “Coherency Theory - An Excellent Reference on the Subject,” *IEEE Power and Energy Magazine*, vol. 12, No. 1, pp. 102-104, Jan 2014.

**Conference Papers (total: 55):**

**2017**

53. Nan Duan (\*), Aleksandar Dimitrovski, Srdjan Simunovic, **Kai Sun**, Junjian Qi, Jianhui Wang, “Embedding Spatial Decomposition in Parareal in Time Power System Simulation,” IEEE ISGT Europe, September 26-29, 2017, Torino, Italy. (*Corresponding author*)
54. Yongli Zhu (\*), Bin Wang (\*), **Kai Sun**, “Damping Control for Power Systems Using Energy Storage,” 29th Chinese Control and Decision Conference, Chongqing, China, May 28-30, 2017. (*Corresponding author*)
55. Wenyun Ju (\*), Bin Wang (\*), **Kai Sun**, “Can Nonlinear Electromechanical Oscillation be Analyzed Using an Equivalent SMIB System?” IEEE PES General Meeting, July 16-20, 2017, Chicago, IL. (*Corresponding author*)
56. Y. Wang, H. Pulgar-Painemal, **K. Sun**, “Online analysis of voltage security in a microgrid using convolutional neural networks,” IEEE PES General Meeting, July 16-20, 2017, Chicago, IL.
57. I.R. Cabrera (\*), Bin Wang (\*), **Kai Sun**, “A Method to Locate the Source of Forced Oscillations Based on Linearized Model and System Measurements,” IEEE PES General Meeting, July 16-20, 2017, Chicago, IL. (*Corresponding author*)
58. Chengxi Liu (#), Bin Wang (\*), **Kai Sun**, “Fast Power System Simulation Using Semi-Analytical Solutions Based on Pade Approximants,” IEEE PES General Meeting, July 16-20, 2017, Chicago, IL. (*Corresponding author*)
59. Eric Abreut (\*), Bin Wang (\*), **Kai Sun**, “Semi-Analytical Fault-on Trajectory Simulation and Its Application in Direct Methods,” IEEE PES General Meeting, July 16-20, 2017, Chicago, IL. (*Corresponding author*)

**2016**

60. N. Duan (\*), A. Dimitrovski, S. Simunovic, **K. Sun**, “Applying Reduced Generator Models in the Coarse Solver of Parareal in Time Parallel Power System Simulation,” IEEE PES Innovative Smart Grid Technologies Europe (ISGT Europe) Conference, October 9-12, 2016, Ljubljana, Slovenia. (*Corresponding author*)
61. J. Qi (#), **K. Sun**, W. Kang, “Adaptive Optimal PMU Placement Based on Empirical Observability Gramian,” IFAC Symposium on Non-Linear Control Systems (NOLCOS), August 23-25, 2016, Monterey, CA. (*Corresponding author*)
62. A. C. Teron (\*), A. Bartlett (\*), N. Duan (\*), **K. Sun**, “Estimating the Nonlinear Oscillation Frequency of a Power System Using the Harmonic Balanced Method,” IEEE PES General Meeting, July 17-21, 2016, Boston, MA. (*Corresponding author*)
63. D. Osipov (\*), F. Hu (\*), **K. Sun**, “Voltage Stability Margin Estimation for a Load Area Using a Three-Bus Equivalent,” IEEE PES General Meeting, July 17-21, 2016, Boston, MA. (*Corresponding author*)

64. F. Hu (\*), L. Yang, J. Wang, Y. Ma, **K. Sun**, L.M. Tolbert, F. Wang, "Measurement-based Voltage Stability Assessment and Control on CURENT Hardware Test Bed System," IEEE PES General Meeting, July 17-21, 2016, Boston, MA. (*Corresponding author*)
65. S. Maslennikov, B. Wang (\*), Q. Zhang, F. Ma, X. Luo, **K. Sun**, E. Litvinov, "A Test Cases Library for Methods Locating the Sources of Sustained Oscillations," IEEE PES General Meeting, July 17-21, 2016, Boston, MA.

## 2015

66. Y. Tong, J. Sun, **K. Sun**, P. Li, "Outsourcing Power System Simulations," IEEE GLOBECOM, December 6-10, 2015, San Diego, CA.
67. Y. Tong, J. Sun, **K. Sun**, "Privacy-preserving spectral estimation in smart grid," IEEE SmartGridComm Symposium, November 2-5, 2015, Miami, FL.
68. F. Bai, H. Liu, L. Zhu, Y. Liu, **K. Sun**, X. Wang, M. Patel, E. Farantatos, "A Measurement-based Control Input-output Signal Selection Approach to Damp Inter-area Oscillations," IEEE PES Asia-Pacific Power & Energy Engineering Conference (APPEEC), November 15-18, 2015, Brisbane, Australia.
69. T. Ding, **K. Sun**, F. Li, H. Sun, X. Zhang, "Graph Theory Based Splitting Strategies for Power System Islanding Operation," IEEE PES General Meeting, July 26-30, 2015, Denver, CO.
70. G. Gurralla, A. Dimitrovski, P. Sreekanth, S. Simunovic, M. Starke, **K. Sun**, "Application of Adomian Decomposition for Multi-Machine Power System Simulation," IEEE PES General Meeting, July 26-30, 2015, Denver, CO.
71. N. Duan (\*), B. Wang (\*), **K. Sun**, "Analysis of Power System Oscillation Frequency Using Differential Groebner Basis and the Harmonic Balance Method," IEEE PES General Meeting, July 26-30, 2015, Denver, CO. (*Corresponding author*)
72. Y. Zhu (\*), R. Azim (\*), H. A. Saleem (\*), **K. Sun**, D. Shi, R. Sharma, "Microgrid Security Assessment and Islanding Control by Support Vector Machine," IEEE PES General Meeting, July 26-30, 2015, Denver, CO. (*Corresponding author*)
73. B. Wang (\*), **K. Sun**, X. Su, "An Oscillation Decoupling Based Direct Method for Power System Transient Stability Analysis," IEEE PES General Meeting, July 26-30, 2015, Denver, CO. (*Corresponding author*)
74. W. Ju (\*), J. Qi (#), **K. Sun**, "Simulation and Analysis of Cascading Failures on an NPCC Power System Test Bed," IEEE PES General Meeting, July 26-30, 2015, Denver, CO. (*Corresponding author*)
75. E. Farantatos, A. Del Rosso, N. Bhatt, **K. Sun**, Y. Liu, L. Min, C. Jing, J. Ning, M. Parashar, "A Hybrid Framework for Online Dynamic Security Assessment Combining High Performance Computing and Synchrophasor Measurements," IEEE PES General Meeting, July 26-30, 2015, Denver, CO.
76. M. Nakmali (\*), D. Osipov (\*), **K. Sun**, "A New Hybrid Approach to Thevenin Equivalent Estimation for Voltage Stability Monitoring," IEEE PES General Meeting, July 26-30, 2015, Denver, CO. (*Corresponding author*)
77. W. Huang (\*), **K. Sun**, J. Qi (#), Y. Xu, "Voronoi Diagram Based Optimization of Dynamic Reactive Power Sources," IEEE PES General Meeting, July 26-30, 2015, Denver, CO. (*Corresponding author*)
78. N. Duan (\*), **K. Sun**, "Application of the Adomian Decomposition Method for Semi-Analytic Solutions of Power System Differential Algebraic Equations," Powertech, June 29-July 2, 2015, Eindhoven, Netherlands. (*Corresponding author*)
79. R. Azim (\*), **K. Sun**, F. Li, Y. Zhu (\*), H. A. Saleem (\*), D. Shi, R. Sharma, "A Comparative Analysis of Intelligent Classifiers for Passive Islanding Detection in Microgrids," Powertech, June 29-July 2, 2015, Eindhoven, Netherlands. (*Corresponding author*)

80. R. Azim (\*), Y. Zhu (\*), H. A. Saleem (\*), **K. Sun**, F. Li, D. Shi, R. Sharma, “A Decision Tree Based Approach for Microgrid Islanding Detection,” IEEE PES Innovative Smart Grid Technologies (ISGT) Conference, February 17-20, 2015, Washington DC. (*Corresponding author*)

### 2014 and before

81. A.D. Rosso, E. Farantatos, N. Bhatt, **K. Sun**, Y. Liu, C. Jing, J. Ning, “Hybrid Simulation/Measurement-Based Framework for Online Dynamic Security Assessment,” CIGRE - The Grid of the Future Conference, October 19-21, 2014, Houston, TX.
82. **K. Sun**, W. Kang, “Observability and Estimation Methods Using Synchrophasor,” The 19<sup>th</sup> World Congress of the International Federation of Automatic Control (IFAC), Cape Town, South Africa, August 24-29, 2014. (*Corresponding author*)
83. Feifei Bai, Yong Liu, Yilu Liu, **Kai Sun**, Xiaoru Wang, Navin Bhatt, Alberto Del Rosso, Evangelos Farantatos, “Measurement-Based and Modeling-Based Methods to Establish Input-Output Relationship for System Identification-Based Models,” IEEE PES General Meeting, July 27-31, 2014, National Harbor, MD.
84. Yin Lei, Yong Liu, Gefei Kou, Bin Wang (\*), Changgang Liu, **Kai Sun**, Yilu Liu, Kevin Tomsovic, Joe Chow, “A Study on Wind Frequency Control under High Wind Penetration on an NPCC System Model,” IEEE PES General Meeting, July 27-31, 2014, National Harbor, MD.
85. B. Trento, B. Wang (\*), **K. Sun**, and L. M. Tolbert, “Integration of Phase-Locked Loop Based Real-time Oscillation Tracking in Grid Synchronized Systems,” IEEE PES General Meeting, July 27-31, 2014, National Harbor, MD. (*Corresponding author*)
86. F. Hu (\*), **K. Sun**, et al, “An Adaptive Three-bus Power System Equivalent for Estimating Voltage Stability Margin from Synchronized Phasor Measurements,” IEEE PES General Meeting, July 27-31, 2014, National Harbor, MD. (*Corresponding author*)
87. L. E. Bernal (\*), F. Hu (\*), **K. Sun**, E Farantatos, “Identification and Wide-area Visualization of the Centers of Oscillation for a Large-scale Power System,” IEEE PES General Meeting, July 27-31, 2014, National Harbor, MD. (*Corresponding author*)
88. B. Wang (\*), **K. Sun**, A. D. Rosso, E. Farantatos, N. Bhatt, “A Study on Fluctuations in Electromechanical Oscillation Frequencies of Power Systems,” IEEE PES General Meeting, July 27-31, 2014, National Harbor, MD. (*Corresponding author*)
89. W. Huang (\*), **K. Sun**, J. Qi (#), Y. Xu, “A New Approach to Optimization of Dynamic Reactive Power Sources Addressing FIDVR Issues,” IEEE PES General Meeting, July 27-31, 2014, National Harbor, MD. (*Corresponding author*)
90. Feifei Bai, Yilu Liu, **Kai Sun**, Navin Bhatt, Xiaoru Wang, “Input Signals Selection for Measurement-Based Power System ARX Dynamic Model Response Estimation,” IEEE PES Transmission & Distribution (T&D) Conference and Exposition, April 14-17, 2014, Chicago, IL.
91. Changgang Li, Yong Liu, **Kai Sun**, Yilu Liu, Navin Bhatt, “Measurement Based Power System Dynamics Prediction with Multivariate AutoRegressive Model,” IEEE PES Transmission & Distribution (T&D) Conference and Exposition, April 14-17, 2014, Chicago, IL.
92. **K. Sun**, F. Hu (\*), N. Bhatt, “A New Approach for Real-Time Voltage Stability Monitoring Using PMUs,” IEEE PES Innovative Smart Grid Technologies Asia (ISGT Asia) Conference, May 20-23, 2014, Kuala Lumpur, Malaysia. (*Corresponding author*)
93. G. Wang, C.-C. Liu, N. Bhatt, E. Farantatos, **K. Sun**, “Observability for PMU-based monitoring of nonlinear power system dynamics,” 2013 IREP Symposium - Bulk Power System Dynamics and Control – IX, Aug. 25-30, 2013, Rethymnon, Greece.
94. **K. Sun**, X. Luo, J. Wong, “Early Warning of Wide-Area Angular Stability Problems Using Synchrophasors,” IEEE PES General Meeting, July 23-26, 2012, San Diego, CA. (*Corresponding author*)

95. Y. Liu, **K. Sun**, Y. Liu, “Measurement-based Power System Dynamic Model for Response Estimation,” IEEE PES General Meeting, July 23-26, 2012, San Diego, CA. (*Corresponding author*)
96. F. Galvan, A. Abur, **K. Sun**, V. Venkatasubramanian, “Implementation of Synchrophasor Monitoring at Entergy: Tools, Training and Tribulations,” IEEE PES General Meeting, July 23-26, 2012, San Diego, CA.
97. G. Zhang, **K. Sun**, H. Chen, R. Carroll, Y. Liu, “Application of Synchrophasor Measurements for Improving Operator Situational Awareness,” IEEE PES General Meeting, July 24-29, 2011, Detroit, MI.
98. **K. Sun**, P. Zhang, N.S.B.N. Yusuf, “Predicting Post-contingency Stability Margin Using Synchrophasors,” IEEE PES General Meeting, July 25-29, 2010, Minneapolis, MN. (*Corresponding author*)
99. Y. Hou, C.-C. Liu, P. Zhang, **K. Sun**, “Constructing power system restoration strategies,” IEEE International Conference ELECO, November 5-8, 2009, Bursa, Turkey.
100. R. Diao, V. Vittal, **K. Sun**, S. Kolluri, S. Mandal, F. Galvan, “Decision Tree Assisted Controlled Islanding for Preventing Cascading Events,” IEEE PES Power Systems Conference & Exposition, March 15-18, 2009, Seattle, WA.
101. N. Bhatt, S. Sarawgi, R. O’Keefe, P. Duggan, M. Koenig, M. Leschuk, S. Lee, **K. Sun**, V. Kolluri, S. Mandal, M. Peterson, D. Brozman, S. Hedden, E. Litvinov, S. Maslennikov, X. Luo, E. Uzunovic, B. Fardanesh, L. Hopkins, A. Mander, K. Carman, M.Y. Vaiman, M.M. Vaiman, M. Povolotskiy, “Assessing Vulnerability to Cascading Outages,” IEEE PES Power Systems Conference & Exposition, March 15-18, 2009, Seattle, WA.
102. Ross Baldick, Badrul Chowdhury, Ian Dobson, Zhaoyang Dong, Bei Gou, David Hawkins, Zhenyu Huang, Manho Joung, Janghoon Kim, Daniel Kirschen, Stephen Lee, Fangxing Li, Juan Li, Zuyi Li, Chen-Ching Liu, Xiaochuan Luo, Lamine Mili, Stephen Miller, Marvin Nakayama, Milorad Papic, Robin Podmore, John Rossmair, Kevin Schneider, Hongbin Sun, **K. Sun**, David Wang, Zhigang Wu, Liangzhong Yao, Pei Zhang, Wenjie Zhang, Xiaoping Zhang (IEEE PES CAMS Task Force on Understanding, Prediction, Mitigation and Restoration of Cascading Failures), “Vulnerability Assessment for Cascading Failures in Electric Power Systems,” IEEE PES Power Systems Conference & Exposition, March 15-18, 2009, Seattle, WA
103. Ross Baldick, Badrul Chowdhury, Ian Dobson, Zhaoyang Dong, Bei Gou, David Hawkins, Henry Huang, Manho Joung, Daniel Kirschen, Fangxing Li, Juan Li, Zuyi Li, Chen-Ching Liu, Lamine Mili, Stephen Miller, Robin Podmore, Kevin Schneider, **K. Sun**, David Wang, Zhigang Wu, Pei Zhang, Wenjie Zhang, Xiaoping Zhang (IEEE PES CAMS Task Force on Understanding, Prediction, Mitigation and Restoration of Cascading Failures), “Initial review of methods for cascading failure analysis in electric power transmission systems,” IEEE PES General Meeting, July 20-24, 2008, Pittsburgh, PA.
104. **K. Sun**, S. Lee, “Power System Security Pattern Recognition Based on Phase Space Visualization,” IEEE Int. Conf. on Electric Utility Deregulation and Restructuring and Power Technologies (DRPT 2008), April 6-9, 2008, Nanjing, China. (*Corresponding author*)
105. **K. Sun**, T. S. Sidhu, M. Jin, “Online Pre-Analysis and Real-Time Matching for Controlled Splitting of Large-Scale Power Networks,” IEEE Intl. Conf. Future Power Systems, November 16-18, 2005, Amsterdam, Netherlands.
106. M. Jin, T. S. Sidhu, **K. Sun**, “A System Splitting Scheme Based on the Identification of Controlling Group,” IEEE Intl. Conf. Future Power Systems, November 16-18, 2005, Amsterdam, Netherlands.
107. **K. Sun**, Q. Zhao, J. Ma, Q. Lu, “A Two-phase Method Based on OBDD for Searching for Splitting Strategies of Large-scale Power Systems,” IEEE PowerCon 2002, October 13-17, 2002, Kunming, China.

**Published EPRI Technical Reports (total: 16)**

108. N. Bhatt, E. Farantatos, A. Del Rosso, **K. Sun**, F. Hu, “Real-Time Reactive Power Management and Voltage Control: Hybrid Voltage Stability Assessment (HVSA)”, EPRI Product ID: 3002002868, 2014.
109. **K. Sun**, F. Hu, N. Bhatt, E. Farantatos, A. Del Rosso, “Hybrid Voltage Stability Assessment (HVSA): Integration of Simulation-Based and Measurement-Based Approaches in Real-Time Operation,” EPRI Product ID: 3002001313, 2013.
110. W. Kang, **K. Sun**, “Detection of Instability Using Synchrophasors: A Theoretical Investigation on Observability with Synchrophasor Networks,” EPRI Product ID: 3002002061, 2013.
111. A. Del Rosso, **K. Sun**, Y. Liu, G. Zhang, H. Chen, “Demonstration of a Novel Synchrophasor-based Situational Awareness System: Wide Area Power System Visualization, On-line Event Replay and Early Warning of Grid Problems”, DOE/EPRI Report DOE-DE-OE0000128, March 2012.
112. C. Liu, G. Wang, Y. Liu, **K. Sun**, N. Bhatt, E. Farantatos, “Comprehensive Stability Analysis Using Synchrophasors”. EPRI Product ID: 1024264, 2012.
113. E. Farantatos, **K. Sun**, A. Del Rosso (PM), “A Hybrid Framework for Voltage Security Assessment Integrating Simulation- and Measurement-Based Approaches,” EPRI Product ID: 1024260, 2012.
114. **K. Sun**, C. Liu, T. Yong, “Visualization of Comprehensive Operating Boundary and Margin Information for Situational Awareness: Methodologies and Functional Requirements,” EPRI Product ID: 1021924, 2011.
115. **K. Sun**, Y. Wang, “Program on Technology Innovation: Online Power System Stability Assessment Using Real-time Measurements - Estimating Stability Margin from Measured Dynamic Trajectories,” EPRI Product ID: 1022397, 2010.
116. C. Liu, **K. Sun**, “Indication of Potential Cascading Outages Using Measurement Data,” EPRI Product ID: 1020051, 2010.
117. **K. Sun**, G. Zhang, “Preventing, Controlling and Mitigating Power System Separation: Developing an Early Warning and Decision Support Tool,” EPRI Product ID: 1020057, 2010.
118. C. Liu, Y. Hou, **K. Sun**, S. Liu, “Prototyping a Decision Support Tool for Evaluation of System Restoration Strategy Options,” EPRI Product ID: 1017799, 2009.
119. **K. Sun**, K. Hur, “Application of Phasor Measurement Units for Controlled System Separation,” EPRI Product ID: 1017800, 2009.
120. **K. Sun**, K. Hur, “Phasor Measurement Unit-Based Out-of-Step Protection Scheme,” EPRI Product ID: 1020377, 2009.
121. **K. Sun**, P. Zhang, L. Min, “Measurement-based Voltage Stability Monitoring and Control for Load Centers,” EPRI Product ID: 1017798, 2009.
122. **K. Sun**, P. Zhang, “Controlled System Separation,” EPRI Product ID: 1015993, 2008.
123. P. Zhang, **K. Sun**, “Effective Use of Distributed Phasor Measurement Units and Disturbance Monitoring Devices for Wide-Area Monitoring, Load Modeling and Voltage Instability Load Shedding,” EPRI Product ID: 1018432, 2008.

### **INVITED OR KEYNOTE TALKS**

1. *A Semi-Analytical Framework for Faster Deterministic and Stochastic Power System Simulations* at **PSDP DSA Panel Session with 2017 IEEE PES General Meeting**, Chicago, IL, July 19, 2017.
2. *Modern Power Grid Stability Assessment: Moving from Online to Faster-Than-Real-Time*, **Texas A&M University**, March 24, 2017.

3. *Locating the Source of Sustained Oscillation* at **IEEE PES tutorial “Use of Synchrophasors in Grid Operations – From Oscillation Source Detection to Other Use Cases”** in Boston, MA, July 19, 2016.
4. *WAMS based Controlled System Separation to Mitigate Cascading Outages* at the **American Control Conference Workshop on Smart Grid Control**, Boston, MA, July 5, 2016,
5. *Faster-Than-Real-Time Power System Stability Assessment*, at **Tianjin University** on May 29, 2016.
6. *Future power grid stability assessment and control* at the **Symposium on Emerging Frontiers in Systems and Control, Tsinghua University**, Beijing, May 27, 2016.
7. *Measurement-based Power System Stability Assessment*, at **Beijing Jiaotong University** on May 24, 2016
8. *Development and Demonstration of CURENT Testbed Systems* at the **2016 i-PCGRID (Innovations in Protection & Control for Greater Reliability Infrastructure Development) Workshop**, San Francisco, CA, March 30, 2016.
9. *Measurement-Based Real-Time Voltage Stability Monitoring for Load Areas* at **NASPI Working Group Meeting** in Atlanta GA on March 24, 2016
10. *Decision Support Tools for Power System Restoration*, at **Northeast Power Coordinating Council Restoration Working Group Meeting**, Boston, MA, November 3-4, 2015.
11. *Hybrid Voltage Stability Assessment Using Simulation and Measurement Based Approaches*, Tsinghua University, May 13, 2015
12. *Controlled system separation to mitigate cascading failures using wide-area measurement data*, Beijing Jiaotong University, May 7, 2015.
13. *Decision Trees Based Systematic Approach for Dynamic Security Assessment and Preventive Control in a Power Grid* at Beijing Jiaotong University, Beijing, China on June 6, 2014
14. *Prevention and Mitigation of Cascading Outages: New Challenges and Thinking*, Tsinghua University, Beijing, China, June 3, 2014
15. *Hybrid voltage stability assessment tool* at Southwest Power Pool, Little Rock, AR, June 11, 2013
16. *Real Time Predictive Capabilities for Power System Stability and Control: A hybrid approach* at **US DOE Advanced Grid Modeling Workshop** in Knoxville, TN on Feb 5, 2013
17. *Real-time Wide-area Situational Awareness and Stability Control Using Synchrophasors* at the **NSF US-China Workshop “Identification of Challenges and Opportunities for Large Scale Deployment of the Smart Grid”**, Arlington, VA, Feb 28-Mar 1, 2013.
18. *Demonstration of a Synchrophasor based Wide Area Situational Awareness System* at **NASPI Working Group Meeting** in Atlanta GA on Oct 18, 2012
19. *Early Warning of Wide-Area Angular Stability Problems Using Synchrophasors* at the **PSDP Power System Early Warning Panel** with 2012 IEEE PES general meeting in San Diego, CA on July 24, 2012
20. *Prevention and Mitigation of Cascading Outages in Power Grids Using Wide-Area Synchrophasor Measurements* at the **32<sup>nd</sup> CNLS (Center for Nonlinear Studies) Annual Conference** in Santa Fe, NM on May 25, 2012
21. *Demonstration of a Synchrophasor-based Situational Awareness System* at the **DOE Synchrophasor Application Workshop** at Tennessee Valley Authority in Chattanooga, TN on October 23, 2012
22. *Demonstration of a Synchrophasor-based Situational Awareness System* at the **NASPI Working Group Meeting** in Burlingame, CA on October 12, 2011
23. *Introduction of EPRI Synchrophasor R&D Projects* at Arizona State University on April 16, 2010.
24. *Vision on a Self-healing Smart Transmission Grid* at **EPRI/TVA Self-healing, Protection and Control Workshop** in Knoxville, TN on April 16, 2009

25. **Precursor Signals of Cascading Outages based on Visualization of PMU Data** at the **NASPI Working Group Meeting** in New Orleans, LA on October 16, 2008
26. **Controlled System Separation: Issues and State-of-the-Art Technologies** at the **EPRI/Center Point Energy Controlled Separation and System Restoration Workshop** in Houston, TX on November 12, 2008
27. **Hierarchical Temporal Memory based Power System Stability Pattern Recognition** at the **NASPI Working Group Meeting** in Montreal, Canada on September 6, 2007

### **OTHER ACTIVITIES AND SERVICES**

#### ***Committee member, session chair and proposal panelist***

1. Panelist, NSF CAREER Award proposals, 2016
2. Panelist, MIT-Skoltech Initiative Research Center proposals, 2013.
3. Webmaster of IEEE PES Task Force on Oscillation Source Location since 2016
4. Session Chair of the Transactions Paper Session T12 at IEEE PES General Meeting on July 17-21, 2016, Boston, MA.
5. Session Chair of the Paper Forum Session at IEEE PES General Meeting on July 26-30, 2015, Denver, CO.
6. Technical Program Committee member and session chair of IEEE GreenTech Conference, April 15-17, 2015, New Orleans, LA.
7. Panel Chair at the First International Workshop on Power Grid-Friendly Computing (PGFC 2012) in the 3rd IEEE International Green Computing Conference (IGCC'12), June 5, 2012, San Jose, CA.
8. Session Chair of “Cascading Failures” Panel in IEEE PES General Meeting on July 24-29, 2011, Detroit, MI.

#### ***College and Departmental Services***

1. College Reliability and Maintainability Engineering Advisory Committee, 2013 - Present
2. Department Undergraduate Committee, 2015- Present
3. Power Electronics Faculty Search Committee, 2013
4. Power Systems Faculty Search Committee, 2014

### **ADVISED VISITING SCHOLARS**

1. Dr. Ping Ma (visiting professor from Qingdao University, China), 11/2012-5/2013
2. Chengxi Liu (visiting PhD student from Aalborg University, Denmark), 10/2012-4/2013
3. Rui Yao (visiting PhD student from Tsinghua University, China), 9/2014-3/2015
4. Dongheng Cai (visiting PhD student from UESTC, China), 9/2014-9/2015
5. Dr. Hualiang Fang (visiting professor from Wuhan University, China), 2/2015-2/2016
6. José Iván Reyes Cabrera (visiting PhD student from CINVESTAV, México), 10/2015-8/2016,
7. Dr. Huimin Gao (visiting professor from Hangzhou Dianzi University, China), 4/2016-10/2016
8. Guoqiang Zu (visiting PhD student from Tianjin University, China), 9/2016 – Present

9. Yichen Guo (visiting PhD student from Shandong University, China), 10/2016 - Present

**RELEASED SOFTWARE PRUDUCTS (as a key developer)**

1. Online Measurement-Based Voltage Stability Assessment Tool (MBVSA) Version 1.0 Beta, EPRI Product ID: 1024989, 2012
2. Synchrophasor-based Wide-Area Situation Awareness Tool (WASAT) Version 1.0 Beta, EPRI Product ID: 1023123, 2012
3. System Separation Decision Support (SSDS) Tool Version 1.0, EPRI Product ID: 1021714, 2011
4. Measurement-Based Voltage Stability Analysis (MVSA) Tool Version 1.0, EPRI Product ID: 1020053, 2010
5. Measurement-based Voltage Stability Margin Calculator (MVSMC) Version 1.0, EPRI Product ID: 1020264, 2009