Steven H. Low

Frank J. Gilloon Professor
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Education

PhD in EE: Berkeley, 1992
MSc in EE: Berkeley, 1989
BS in EE: Cornell, 1987

Appointments

Primary appointments:

- **Frank J. Gilloon Professor**, 2/2018 – present
  Professor, 5/2006 – present
  Associate Professor, 8/2000 – 5/2006
  CMS Dept. and EE Dept., Caltech, Pasadena CA91125
- **Co-founder, CEO**, 4/2006 – 4/2008 (Chairman 2006 – 2012)
  FastSoft, Inc, Monrovia CA 91016
- **Senior Lecturer**, 5/1996 – 7/2000
  Dept. of EEE, University of Melbourne, Australia
- **Member of Technical Staff**, 8/1992 – 2/1996
  AT&T Bell Labs, Murray Hill, NJ
  This series of work has resulted in
  - IEEE William R. Bennett Prize for Best Original Paper in IEEE/ACM Transactions on Networking in 1996 for the paper "Anonymous Credit Cards and Their Collusion Analysis" (with N. Maxemchuk and S. Paul, 1997)
  - 1996 R&D 100 Award (1996)
  - Three patents (1995, 1997, 2000)
    * Anonymous credit card transactions (Low, Maxemchuk, Paul, 1995)
    * Document copying deterrent method using line and word shift techniques (Brassil, Low, Maxemchuk, O'Gorman, 1997)
    * Document copying deterrent method (Brassil, Low, Maxemchuk, O'Gorman, 2000)
  - 2 software prototypes, 8 journal and 30 conference papers

Other appointments:

- **Honorary Professor**, Jan 2017 – June 2022
  University of Melbourne, Dept of EEE, Australia
- **Visiting Professor**, Sept – Dec 2017
  Cornell Tech, New York, NY
- **Changjiang Chair Professor**, Sept 2012 – August 2015
  Qiushi Chair Professor, Jan 2016 – June 2018
  Zhejiang University, Hangzhou, China

- **Honorary International Chair Professor**, 2012 – 2015
  National Taipei University of Technology, Taipei, Taiwan
- **Guest Professor**, 2010 – 2013
  Shanghai Jiao Tong University, China
- **Adjunct Professor**, 11/2008 – 10/2013
  Faculty of Information Communication Technologies, Swinburne University of Technology, Melbourne, Australia
- **Senior Fellow**, 8/2000 – 2004
  Dept. of EEE, University of Melbourne, Australia
- **Visiting Assistant Professor**, 2/1996 – 4/1996
  Dept. of EEE, University of Science and Technology, Hong Kong
- **Lecturer**, 9/1995 – 1/1996
  Dept. of ECE, Rutgers University, Piscataway, NJ
- **Consultant**, 9/1991 – 1/1992
  Transmission Development Division NEC, San Jose, CA
- **Research Engineer**, Summer 1991
  Advanced Technology Group, Apple Computer, Cupertino, CA
- **Yield Engineer**, Summer 1987
  Technology Development, Intel Corp., Santa Clara, CA
- **Engineering Co-op Intern**, Summer 1986
  System Technology Development, Intel Corp., Hillsboro, OR
- **Engineering Co-op Intern**, Fall 1985
  System Technology Development, Intel Corp., Hillsboro, OR

Activities

- **Editorial board**:
  - Senior Editor (inaugural), Steering Committee (Member 1/2013 – 1/2017, Chair 1/2015 – 1/2017), IEEE Transactions on Network Science and Engineering, 2014 – 2021
  - Member, Editorial Board, Elsevier Journal on Sustainable Energy, Grids and Networks, 2014 – present
  - NOW, Foundations and Trends in Energy Systems, 2014 – present
  - NOW, Foundations and Trends in Networking, 2004 – 2018
  - Senior Editor (inaugural), IEEE Transactions on Control of Network Systems, 2014 – 2019
  - Senior Editor, IEEE Journal on Selected Areas in Communications (mentor for annual Series on Smart Grid Comm. 2012 – 2014), 2004 – 2014
  - IEEE Transactions on Automatic Control, 2010
  - IEEE/ACM Transactions on Networking, 1997 – 2006
  - Computer Networks Journal, 2003 – 2005
  - ACM Computing Surveys, 2004 – 2010

- **Advisory board or committee**:
  - National Light Rail (NLR) Network Research Committee, August 2004 – 2006
  - Networking and Information Technology Technical Advisory Group for the US President's Council of Advisors on Science and Technology (PCAST), 2006 – 2007
  - Southern California Edison (SCE) Technology Advisory Board, April 2011 – Dec 2013
  - Caltech Resnick Institute, January 2013 –
  - External Examiner, Dept of Electrical & Electronic Engineering, The University of Hong Kong, 2014 – 2018
  - Advisory Committee on Information Engineering, The Chinese University of Hong Kong, 2016 – 2018
  - Powernet Advisory Group, Stanford University, 2016 – 2019
  - IEEE Fellows Evaluation Committee (Computer Society), 2017
  - Southern California Edison (SCE) EASE (Electric Access System Enhancement) Project Technical Advisory Committee, 2018 – 2021
  - NSF AI Institute for Advances in Optimization, Scientific Advisor Board, 2022 – 2027
  - Award committees (partial): INFOCOM Achievement Award (2022), SIGEnergy Rising Star (2022)
- **Guest editor**:
  - Operations Research, Special Issue on Computational advances in short-term power system operations, 2021
  - IEEE Transactions on Control of Network Systems, Special issue on analysis, control and optimization of energy system networks, 2019
  - IEEE Transactions on Smart Grid, Special issue on distributed control and optimization for power systems, 2017
  - Series Mentor, IEEE Journal on Selected Areas in Communications, Annual Series on Smart Grid, 2012–2014
  - IEEE Journal on Selected Areas in Communications special issue on Nonlinear Optimization of Communication Systems, August 2006
  - IEEE Journal on Selected Areas in Communications special issue on Copyright and Privacy Protection, May 1998
- **Tutorials/Short courses**: Power Systems Analysis text
  1. **Unbalanced 3-phase power flow models, analysis, and optimization**: OR2022 (Int'l Conference on Operations Research), Karlsruhe Institute of Technology, Karlsruhe, German (invited tutorial; Steffen Rebennack)
  2. **Power flow problems**: Electrical & Electronic Engineering, University of Melbourne, Australia, July 2019
  3. **Mathematical Frontiers of Electric Grid**: National Academies of Sciences, Engineering and Medicine Monthly Webinar (with Sean Meyn), Washington, DC, February 2018
  4. **Real-time decision bootcamp: power systems**: Simons Institute for the Theory of Computing, UC Berkeley, January 2018
  5. **Power systems analysis**: Zhejiang University, Hangzhou, China, April 2015

6. **Mathematical analysis of Internet and power systems**: Skoltech, Moscow, Russia, September 2015

- **Tutorials/short courses**: Convex relaxation of optimal power flow

1. **Grid Science Winter School**, Sante Fe, NM, January 2015
2. **Lehigh University**, Energy Cluster, Bethlehem, PA, June 2014
3. **Zhejiang University**, Hangzhou, China, March 2014 (joint with Prof Vincent Lau, HKUST, on *Control and optimization in wireless and power networks*)
4. **Los Alamos National Lab**, Los Alamos, NM, August 2013

- **Tutorials/short courses**: Control and optimization of networks and TCP congestion control

1. **PURSUIT Summer School**, Cambridge, England, August 2011
2. **KTH (Royal Institute of Technology)**, Automatic Control Department, Stockholm, Sweden, August 2010
3. **Lund University**, Automatic Control Department, Lund, Sweden, August 2010
4. **IEEE ISIT (International Symposium on Information Theory)**, Seattle, WA, July 2006 (with Mung Chiang and Rob Calderbank, Princeton)
5. **IEEE Infocom**, Miami, FL, March 2005 (with Mung Chiang, Princeton)
6. **IEEE Globecom**, Dallas, TX, November 2004 (with Mung Chiang, Princeton)
7. **ACM Sigcomm**, San Diego, CA, August, 27-28, 2001
8. **ACM Sigmetrics**, Cambridge, MA, June 16, 2001
9. **IEEE Infocom**, Alaska, April 2001 (with Matthew Roughan, AT&T Labs - Research)
10. **Grampians Workshop**, Australia, December 8, 2000
11. **IEEE ICC** (International Conference on Communications), New Orleans, USA, June 23, 2000

- **Workshop and invited session organization** (partial list)

1. Workshop on Flexible operation and advanced control for energy systems, INI Programme on The mathematics of energy systems, Issac Newton Institute for Mathematical Sciences, University of Cambridge, January 2019 (with Louis Wehenkel (Université de Liège, Ana Busic (CNRS – Ecole Normale Superieure Paris), Pierre Pinson Danmarks Tekniske Universitet))
2. Program on Real-time Decision Making at Simons Institute for the Theory of Computing, January – May 2018, UC Berkeley (with Josh Bloom (UC Berkeley), Richard Karp (UC Berkeley, chair), Evdokia Nikolova (UT Austin), Balaji Prabhakar (Stanford))
3. Melbourne Workshop on Future Power Systems, December 2017, University of Melbourne (with Pierluigi Mancarella, UMelb)
4. IEEE CDC Pre-conference Workshop on Smart Grids, December 2010 (with Nader Motee, Kishan Baheti)
5. Princeton CISS Invited Session on control and optimization of networks, March 2006 (with Mung Chiang)
6. IEEE CCW Invited Session on control and optimization of networks, October 2005
7. International Conference on Complementarity, Duality, and Global Optimization, August 2005 (with Mung Chiang)

8. ACM Sigmetrics Invited Session on control and optimization of networks, June 2005
9. IEEE CDC Invited Session on control and optimization of networks, December 2004
10. Princeton CISS Invited Session on optimization of communication systems, March 2004 (with Mung Chiang)
11. IEEE CCW Invited Session on control and optimization of networks, October 2004

- **Panel organization**:

1. Entrepreneurship in Networking Research, IEEE Infocom, Phoenix, AZ, April 2008
2. Sustainable Computing and Networking, IEEE Infocom, Shanghai, China, April 2011

- **Technical program committee** (partial and outdated):

  - Power Systems Computation Conference (PSCC): 2016, 2018, 2020
  - ACM e-Energy: 2016 (TPC co-Chair), 2019 (General co-Chair), 2020
  - IREP (Bulk Power Systems Dynamics and Control Symposium): 2017
  - IEEE Infocom (1999, 2001–12, (Area TPC Chair: 2008, 2010–13), Tutorial co-Chair, 2012))
  - ACM Sigcomm (2004, 2006, 2007)
  - ACM Sigcomm Asia (2005)
  - ACM Sigmetrics (2003, tutorial co-chair)
  - ACM CoNEXT (2010)
  - INFORMS (2006)
  - IEEE Information Theory Workshop (2004)
  - IEEE ICNP (2002, 2003)
  - IEEE Computer Communications Workshop (2000, 2001, 2004, 2005)
  - International Telegraphic Congress (ITC) (2010)
  - IEEE ICC (2003, 2004)
  - Institute for Pure and Applied Mathematics (IPAM) Workshop on "Large Scale Communication Networks" (2002, 2003 (Reunion))
  - International Workshop on Protocols for Fast Long-Distance Networks (PFLDnet) (2003 (co-chair), 2004 (steering committee), 2005, 2006, 2008, 2009)
  - IWQoS (2000, 2002)
  - SPIE ITCOM Conference on performance and control of Network Systems (1997, 1998, 2001, 2002, 2003),
  - High Performance Switching and Routing (HPSR) conference (2003, 2005)
  - IEEE ICON (2000,2001,2003)
  - International Conference on Optical Internet (2003)
  - International Workshop on Digital Watermarking (2002)
  - International Workshop on Digital Communications (2001)
  - Workshop on Information Hiding (1996 - 2001)
  - IFIP Fifth International Conference on Broadband Communications (1999)

- **Program co-chair**:

- General co-chair, ACM e-Energy, Phoenix, AZ, June 2019
- TPC co-chair, ACM e-Energy, Waterloo, Canada, June 2016
- Technical Program Co-chair, International Teletraffic Congress, San Francisco, CA, Sept 2011
- First International Workshop on Protocols for Fast Long-Distance Networks (PFLDnet), CERN, Geneva, Switzerland, January 2003
- IEEE Workshop on Computer Aided Modeling, Analysis and Design of Communication Networks, New York, NY, May 2002

Technology transfer

- FastSoft, Inc., Co-founder, CEO (2006–08), Chairman of the Board (2006–12; acquired by Akamai Technologies)
- PowerFlex Systems, Inc., Co-founder, Chairman of the Board (2017 – 2019; acquired by EDF Renewables)
- 17 US Patent Awards and 1 pending application (6 of 11 Caltech patents licensed to 2 startups)
  - Bell Labs: 1995, 1997, 2000; 2014;
  - Caltech FAST TCP: 2010, 2010, 2011 (licensed to FastSoft)
  - FastSoft FAST TCP: 2013, 2014;
  - Caltech OPF: 4/24/2018, 12/18/2018, 2/5/2019, 6/2/2020
  - Caltech ACN: 6/11/2019, 2/23/2021, 11/9/2021 (licensed to PowerFlex)
  - Caltech ACN Research Portal: 7/05/2022, 1 application (2021 ACN-live)

Honors and awards

- 2021 ACM SIGMETRICS Test of Time Award for the paper "Greening geographical load balancing" by Liu, Lin, Wierman, Low and Andrew in ACM SIGMETRICS, June 2011
- 2021 IEEE INFOCOM Achievement Award
- 2020 ACM (Association for Computing Machinery) Fellow
- 2020 CSEE (Chinese Society for Electrical Engineering) Fellow
- 2018 Frank J. Gilloon Professor of CS and EE, Caltech (Feb 2018 - Jan 2028)
- 2017 Prize Conference Paper for paper "Event detection and localization in distribution grids with phasor measurement units" by Ardakanian, Yuan, Dobbe, von Meier, Low and Tomlin, IEEE Power Energy Society General Meeting, July 2017 ("Best of the best" Conference Paper, only 4 out of 69 Best Conference Papers out of more than 1,400 conference submissions)
- 2017 IEEE William R. Bennett Prize for paper "Multipath TCP algorithms: theory, design and implementation" by Peng, Walid, Hwang and Low in IEEE/ACM Transactions on Networking, February 2016
- 2015 Power System Analysis, Computing and Economics Technical Committee Prize Paper Award for paper "Zero duality gap in optimal power flow problem" by Lavaei and Low in IEEE Transactions in Power Systems, February 2012

- Honorary Professor, Jan 2017 – June 2022
  University of Melbourne, Dept of EEE, Australia
- Changjiang Chair Professor, Sept 2012 – August 2015
  Qiushi Chair Professor, Jan 2016 – June 2018
  Zhejiang University, Hangzhou, China
- Honorary International Chair Professor, 2012 – 2015
  National Taipei University of Technology, Taipei, Taiwan
- Keynote, IFIP WG7.3 Performance Conference, Amsterdam, Netherlands, October 2011
- Okawa Foundation Research Grant, 2011
- Guest Professor, 2010 – 2013
  Shanghai Jiao Tong University, China
- Adjunct Professor, 11/2008 – 10/2013
  Faculty of Information Communication Technologies, Swinburne University of Technology, Melbourne, Australia
- IEEE (Institute of Electrical & Electronics Engineering) Fellow, 2008
- Best Paper Award, IEEE Mobile Ad-hoc and Sensor Systems (MASS), (with Tao Cui, Lijun Chen, Tracey Ho and Lachlan L. H. Andrew), 2007
- Member, Networking and Information Technology Technical Advisory Group for the US President's Council of Advisors on Science and Technology (PCAST), 2006 – 2007
- Internet2 Land Speed Record, Supercomputing Conference, 2003
- 1997 IEEE William R. Bennett Prize for Best Original Paper "Anonymous credit cards and their collusion analysis" by Low, Maxemchuk and Paul in IEEE/ACM Transactions on Networking, December 1996
- 1996 R&D 100 Award (1996)
- 17 US Patent Awards and 1 pending application (6 of 11 Caltech patents licensed to 2 startups)
  - Bell Labs: 1995, 1997, 2000; 2014;
  - Caltech FAST TCP: 2010, 2010, 2011 (licensed to FastSoft)
  - FastSoft FAST TCP: 2013, 2014;
  - Caltech OPF: 4/24/2018, 12/18/2018, 2/5/2019, 6/2/2020
  - Caltech ACN: 6/11/2019, 2/23/2021, 11/9/2021 (licensed to PowerFlex)
  - Caltech ACN Research Portal: 7/05/2022, 1 application (2021 ACN-live)
- AT&T Smartcard Contest Award for Most Innovative Application (1994)
- University Fellowships & Scholarships (UC-Berkeley, 1987)
- Rank First in Graduating Class of Cornell Engineering College (1987)
- Dean's Honor List (Cornell 1984-87)

Invited talks

- **Plenary/Keynote/Distinguished lectures**:

1. Distinguished Seminars for Data Science (online), City University of Hong Kong, April 2022
2. Distinguished Lecture Series, University of Texas, San Antonio, TX, April 2018
3. Panelist, National Academies of Sciences, Engineering and Medicine Monthly Webinar on Mathematical Frontiers of Electric Grid, Washington, DC, February 2018
4. Distinguished Lecture Series, KTH (Royal Institute of Technology), Stockholm, Sweden, May 2017
5. Distinguished Speaker Series, EECS, Northwestern University, Chicago, IL, March 2017
6. Distinguished Visitor, ECE Department Colloquium, University of British Columbia Vancouver, BC, Canada, January 2017
7. Keynote, The Conference on Uncertainty in Artificial Intelligence (UAI), Jersey City, NJ, June 2016
8. Distinguished Speaker, Information Modeling and Control of Complex Systems Workshop (IMaCCS), Ohio State University, Columbus, OH, May 2016
9. Keynote, The 50th Conference on Information Sciences and Systems (CISS), Princeton, NJ March 2016
10. Distinguished Lectures Series, University of Toronto, Canada, November 2015
11. Keynote, NSF Early-Career Investigators Workshop on Cyber-Physical Systems in Smart Cities, Seattle, WA, April 2015
12. Keynote, The 9th International Conference on Information, Communications and Signal Processing (ICICS 2013), Tainan, Taiwan, December 2013
13. Keynote, Information Processing Challenges in the Smart Grid, the IEEE Global Signal and Information Processing Conference, Austin, TX, December 2013
14. Plenary Speaker, Systems & Optimization Aspects of Smart Grid Challenges, Tucson, AZ, March 2013.
15. Distinguished Speaker Series, Northeastern University, Boston, MA, November 2012
16. Keynote, Seventh Annual Coordinated Science Laboratory (CSL) Student Conference, University of Illinois, Urbana-Champaign, IL, January 2012
17. Keynote, IEEE GLOBECOM Workshop on Smart Grid Communications and Networks, Houston, TX, December 2011
18. Keynote, IFIP WG7.3 Performance Conference, Amsterdam, Netherlands, October 2011
19. Distinguished Speaker Series in Information Technology, Rensselaer Polytechnic Institute, February 2005
20. IEEE First Workshop on Provisioning & Transport for Hybrid Networks (PATHNets), San Jose, CA, October 2004
21. The Second ARC-TCP Workshop: Models and algorithms for TCP/IP Networks, Ecole Normale Superieure, Paris, France, November 2003
22. European Union RTN Summer School on Multi-Agent Control, Hamilton Institute, National University of Ireland, Maynooth, Ireland, September 2003
23. Disney Digital Network Roundtable, Burbank, CA, (broadcast to Disney World (FL), ABC (NY), ESPN (CT), Disney Internet Group (WA), Disneyland (LA)), August 2003

24. Workshop on Networking games and resource allocation, Institute of Applied Mathematical Research, Petrozavodsk, Russia, July 2002

- **Invited talks**:

1. Oct 2022: INFORMS Annual Meeting invited session on "Electric vehicle management in coupled power-transportation systems", Indianapolis, IN, (Organizer: Yue Chen; presenter: Tongxin Li)
2. Sept 2022: The 58nd Annual Allerton Conference on Communication, Control, and Computing, invited session on power systems, Monticello, IL (Organizers: Alejandro D. Dominguez-Garcia, Subhonmesh Bose)
3. Sept 2022: Int'l Conference on Operations Research (OR2022), *Unbalanced 3-phase power flow: models, analysis and optimization.* Karlsruhe Institute of Technology, Karlsruhe, German (invited tutorial; Steffen Rebennack)
4. April 2022 online: Peking University Engineering Science Seminar Series, Learning and Control in Power Distribution Grids, College of Engineering, Peking University (Jie Song, Pengcheng You)
5. April 2022 online: Distinguished Seminars for Data Science, Learning and Control in Power Distribution Grids, City University of Hong Kong (Minghua Chen)
6. March 2022 online: MIT EESG Seminar: Learning and Control in Power Distribution Grids (Marija Ilic, Dan Wu)
7. March 2022 online: PES Big Data Tutorial Series, Learning and Control in Power Distribution Grids (Le Xie) IEEE PES Subcommittee on Big Data & Analytics for Power Systems
8. March 2022 online: UCSD Mechanical & Aerospace Engineering Seminar Series: Optimal Power Flow and Smart EV Charging (Patricia Hidalgo-Gonzalez)
9. October 2021 online: The Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting, session on Machine Learning for Power Systems, "Learning Augmented Feedback Voltage Control In Distribution Grids." (Organizer: Pascal van Hentenryck)
10. October 2021: The Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting, session on Data-driven optimization and control for power systems (Organizers: Xin Chen and Yujie Tang; presenter: Tongxin Li)
11. October 2021: Conversations on Sustainability, Caltech Science Exchange webinar
12. September 2021: ANU tutorial on OPF for distribution systems, online (Chathurika Mediwaththe)
13. September 2021: ETH/EPFL Summer School on "Large-scale Optimization and Control of Infrastructure Networks," Lausanne, Switzerland. Optimal power flows for power distribution systems, online (Organizer: Ognjen Stanojev)
14. July 2021: IEEE Power & Energy Systems General Meeting Super Session on Grid Edge - Devices, Control, Applications and System Operation, online (Organizers: Andrey Bernstein, Federico Milano)
15. June 2021: IEEE Control Society Workshop on Control for Societal-scale Challenges: Roadmap 2030, virtual panel, (Organizers: Lina Li and Anders Rantzer)
16. May 2021: INFOCOM session on "A reflection with INFOCOM Achievement Award Winner," online (Host: Guoliang Xue)

17. April 2021: Los Angeles World Affairs Council's panel on "California's Future Power Grid: Smart, Resilient and Reliable," online (Organizer: Kim McCleary Blue)
18. November 2020: 2020 IFIP Performance Conference, Performance and Modelling of Energy Systems Workshop, Highlight talk (Organizer: Omid Ardakanian)
19. November 2020: The Institute for Operations Research and the Management Sciences (INFORMS) session on Differential Privacy for Energy Systems (presenter: Fengyu Zhou), National Harbor, MD (Organizer: J. Kazempour and L. Mitridati)
20. November 2020: The Institute for Operations Research and the Management Sciences (INFORMS) session on Optimization of Networked Energy Resources (presenter: Yue Chen), National Harbor, MD (Organizer: Mads R. Almassalkhi)
21. August 2020: IEEE Power & Energy Systems General Meeting Panel Session on "Electric Vehicles as Flexible Demand-side Resources: Research Progress, Obstacles and Pilot Projects," online, (Organizer: Zechun Hu)
22. August 2020: NREL Workshop on Autonomous Energy Systems (online), Golden CO (Organizer: A. Bernstein, J. King, B. Kroposki)
23. July 2020: American Control Conference (ACC), Denver, CO (Presenter: James Anderson, Fengyu Zhou)
24. June 2020: Seminar on "Cascading Failure Localization and Mitigation in Power Systems" (online), Control Department, Zhejiang University, Hangzhou, China
25. June 2020: The 22nd Conference of the International Federation of Operational Research Societies (IFORS 2020) session on "Control and optimization aspects for managing distributed flexibility" (presenter: Zach Lee), Seoul, Korea (Organizer: Anthony Papavasiliou)
26. April 2020: EECS Seminar Series, UC Irvine, CA (Ender Ayanoglu)
27. October 2019: CMX Seminar Series, CMS, Caltech, CA (Andrew Stuart)
28. September 2019: Workshop on Resilient Control of Infrastructure Networks, Department of Mathematical Sciences, Politecnico di Torino, Torino, Italy (Giacomo Como and Fabio Fagnani)
29. August 2019: IEEE Power & Energy Systems General Meeting panel on New Advances in Interdisciplinary Research: Bridging Operations Research and PES, Atlanta, GA (Organizers: Andy Sun, Pascal Van Hentenryck; Time-varying optimization)
30. August 2019: IEEE Power & Energy Systems General Meeting panel on CAMS, Atlanta, GA (Organizers: Janusz Bialek)
31. August 2019: Chinese Society for Electrical Engineering Workshop on EMS and OPF at IEEE PES GM, Atlanta, GA (Organizer: Xi Chen) [Time-varying optimization and real-time OPF]
32. June 2019: Workshop on Optimisation in Systems Engineering, University of Melborne (Organizer: Iman Shame; Time-varying optimization)
33. May 2019: Oxford University (Oxford Martin Schoool talk (Network of DERs) and Control Group talk (Time-varying optimization))
34. April 2019: Closing Workshop on Looking Forward to 2050, the INI Programme on Mathematics of Energy Systems, Issac Newton Institute for Mathematical Sciences, Cambridge University, UK (Organizer: Bert Zwart)
35. January 2019: Cambridge Control Group seminar, University of Cambridge, UK (title: Tracking performance of time-varying nonconvex optimization with application to OPF)

36. December 2018: IEEE Conference on Decision and Control (CDC invited sessions), Miami Beach, FL
37. December 2018: Symposium on Information Processing Challenges in the Smart Grid at the IEEE GlobalSIP, Austin, TX (Organizer: Yue Zhao, Emiliano Dall'Anese; presenter: Zach Lee)
38. December 2018: Highlight talk at Performance and Modelling of Energy Systems Workshop at the Performance 2018 Conference, Toulouse, France. (Organizer: Prashant, Ardakanian)
39. November 2018: KPMG Forum on Autonomous Vehicles and the implication for the Energy Market, CAST, Caltech (Organizer: Gary Silberg)
40. November 2018: 2nd Georgia Tech Workshop on Electric Energy Systems and Optimization at Georgia Tech, Atlanta GA (Organizer: Andy Sun)
41. August 2018: IEEE Power & Energy Systems General Meeting panel on Business Models for Energy Storage, Portland, OR (Organizers: Yury Dvorkin, Rodrigo Moreno)
42. August 2018: NSF Workshop on Real Time Data Analytics for Power Grid Resiliency, Portland, OR (Organizers: Anurag K Srivastava and Tony Kuh)
43. April 2018: Distinguished Lecture Series, University of Texas, San Antonio, TX
44. February 2018: National Academies of Sciences, Engineering and Medicine Monthly Webinar on Mathematical Frontiers of Electric Grid, Washington, DC (Organizer: Michelle Schwalbe)
45. February 2018: NSF Workshop Real-time Learning and Decision-making in Dynamic Systems, NSF Headquarter, Alexandria, VA (Organizers: Le Xie and Tony Kuh)
46. January 2018: Simons Institute Program on Real-time Decision Making Bootcamp, UC Berkeley, CA (Organizer: Richard Karp)
47. January 2018: RTE Workshop on Semi-Algebraic Techniques for Optimal Power Flow and Stability Assessment, Paris, France (Organizers: Jean-Bernard Lasserre and Patrick Panciatici)
48. December 2017: Symposium on Information Processing Challenges in the Smart Grid at the IEEE GlobalSIP, Austin, TX (presenter: Yujie Tang)
49. November 2017: Workshop on Electric Energy Systems and Operations Research, Georgia Tech, Atlanta, GA (Organizer: Andy Sun)
50. October 2017: INFORMS Annual Meeting, Energy I - Electricity, Houston, TX (presenter: Changhong Zhao)
51. September 2017: NREL Workshop on Autonomous Energy Grid, Golden, CO (Organizer: Emiliano Dall'Anese)
52. July 2017: International School for Materials for Energy and Sustainability VI, Pasadena, CA (Organizer: Harry Atwater)
53. July 2017: IEEE Power Engineering Society General Meeting, Panel Session, Chicago, IL (presenter: Changhong Zhao)
54. May 2017: Distinguished Lecture Series, KTH (Royal Institute of Technology), Stockholm, Sweden
55. April 2017: Duke Workshop on Optimization Under Uncertainty and Data-Driven Science and Engineering, Durham, NC
56. March 2017: The 51st Conference on Information Sciences and Systems (CISS), Baltimore, MD (presenter: Yujia Tang)

57. March 2017: Distinguished Speaker Series, EECS, Northwestern University, Chicago, IL
58. January 2017: Grid Science Winter School and Conference, Sante Fe, NM
59. January 2017: Distinguished Visitor, ECE Department Colloquium, University of British Columbia Vancouver, BC, Canada
60. December 2016: Symposium on Information Processing Challenges in the Smart Grid at the IEEE GlobalSIP, Austin, TX
61. November 2016: EPRI Infrastructure Working Group Meeting, San Francisco, CA
62. October 2016: IEEE ICCCI (Keynote), Wuhan, China
63. September 2016: MIT IDSS (Institute Data, Systems and Society) Launch Workshop, Boston, MA
64. July 2016: IEEE American Control Conference (ACC), Tutorial on Recent Advances on Computational Methods for the Power Flow Equations, Boston, MA
65. June 2016: Simons Institute Workshop on Real-time Decision Making, Simons Institute for the Theory of Computing, Berkeley, CA
66. June 2016: Keynote, The Conference on Uncertainty in Artificial Intelligence (UAI), Jersey City, NJ
67. May 2016: Distinguished Speaker, Information Modeling and Control of Complex Systems Workshop (IMaCCS), Ohio State University, Columbus, OH
68. March 2016: Keynote, The 50th Conference on Information Sciences and Systems (CISS), Princeton, NJ
69. Feb 2016: Industrial & Systems Engineering Dept Colloquium, Georgia Institute of Technology, Atlanta, GA
70. Feb 2016: Information Theory and Applications Workshop, Scripps Seaside Forum, San Diego, CA
71. Jan 2016: Workshop on Frontiers in Distributed Optimization and Control of Sustainable Power Systems, NREL, Golden, CO
72. Jan 2016: IPAM (Institute of Pure and Applied Math) Workshop on Optimization and Equilibrium in Energy Economics, UCLA, CA
73. November 2015: Distinguished Lectures Series, University of Toronto, Canada
74. October 2015: Symposium on Building California's Flexible Grid, Southern California Edison, Huntington Beach, CA.
75. September 2015: Energy Colloquium, Skoltech, Moscow, Russia
76. July 2015: The 22nd International Symposium on Mathematical Programming, Pittsburgh, PA (presenter: Enrique Mallada)
77. June 2015: Advanced Mathematical Methods for Energy Systems: from Theory to Practice, Skoltech, Moscow, Russia
78. April 2015: NSF Early-Career Investigators Workshop on Cyber-Physical Systems in Smart Cities, Seattle, WA (Keynote)
79. March 2015: Workshop on Information and Communication Systems and their Application to Vertical Sectors, Uruguay
80. January 2015: Grid Science Winter School and Conference, Sante Fe, NM
81. December 2014: The 53rd IEEE Conference on Decision and Control, invited sessions on power systems, Los Angeles, CA (presenters: Q. Peng, C. Zhao)

82. November 2014: The 48th Annual Asilomar Conference on Signals, Systems, and Computers invited session on Power Networks, Pacific Grove, CA
83. October 2014: Inaugural Symposium of the IEEE Transactions on Control of Network Systems, Boston, MA
84. October 2014: The Swedish Linnaeus center LCCC (Lund Center for Control of Complex Engineering Systems) Workshop on "Dynamics and Control in Networks", Lund University, Lund, Sweden
85. Sept/Oct 2014: The 52nd Annual Allerton Conference on Communication, Control, and Computing, invited session on "Control and Optimization in Electrical Energy Systems: Smart Grid Applications and Beyond", Monticello, IL (presenter: Enrique Mallada)
86. August 2014: The 18th Power Systems Computation Conference (PSCC) invited session on "Advanced optimization methods for power systems", Wroclaw, Poland
87. August 2014: The 19th World Congress of the International Federation of Automatic Control (IFAC), invited session on "Towards Automated Load Controls in Smart Grids", Cape Town, South Africa (presenter: Enrique Mallada)
88. June 2014: International Symposium on Circuits and Systems, invited session on "Applications of Advanced Nonlinear System Theory to Smart Grids", Melbourne, Australia
89. May 2014: SIAM Conference on Optimization, invited session on "Optimization in Inference and Control", San Diego, CA (presenter: Subhonmesh Bose)
90. April 2014: RTE-IBM workshop on "Semidefinite Programming for Optimal Power Flow Problems", Dublin, Ireland
91. February 2014: The 8th Information Theory and Applications (ITA) Workshop, San Diego, CA
92. Feb 2014: The 9th Annual Carnegie-Mellon Conference on the Electricity Industry, Pittsburgh, PA
93. December 2013: The 9th International Conference on Information, Communications and Signal Processing (ICICS 2013), Tainan, Taiwan
94. December 2013: Symposium on Information Processing Challenges in the Smart Grid at the IEEE GlobalSIP, Austin, TX
95. November 2013: Asilomar Conference on Signals, Systems, and Computers invited session on Power Networks, Pacific Grove, CA
96. October 2013: 51st Annual Allerton Conference on Communication, Control and Computing invited session on power systems, Monticello, IL
97. Sept 2013: Science and Technology Innovators' Speaker Series, University of Minnesota, Minneapolis, MN
98. June 2013: 2013 International Workshop on Mathematical Issues in Information Sciences, Xi'an, China
99. June 2013: FERC (Federal Energy Regulatory Commission's) Conference on Increasing Real-Time and Day-Ahead Market Efficiency through Improved Software, Washington DC
100. June 2013: American Control Conference Tutorial on Pathways Towards Smart, Flexible, Efficient Power Systems, Washington DC
101. June 2013: 12th International Electric Power Control Center (EPCC) Workshop, Bedford Springs, PA

102. May 2013: Workshop on Modeling and Simulation of Cyber-Physical Energy Systems, Berkeley, CA
103. March 2013: Workshop on Systems & Optimization Aspects of Smart Grid Challenges, Tucson, AZ
104. February 2013: The 7th Information Theory and Applications (ITA) Workshop, UCSD, San Diego, CA
105. December 2012: 51st IEEE Conference on Decision and Control, Maui, HI
106. December 2012: Interdisciplinary Workshop on Smart Grid Design & Implementation, Gainesville, FL
107. December 2012: IEEE Globecom Workshop on Smart Grid Communications: Design for Performance, Anaheim, CA
108. December 2012: Asia Pacific Signal and Information Processing Association (APSIPA) Annual Summit and Conference, Los Angeles, CA
109. November 2012: Distinguished Speaker Series, Northeastern University, Boston, MA
110. October 2012: GridWise Architecture Countil Meeting, Irving, TX
111. October 2012: KE^2 Leadership Roundtable and Forum, Resnick Institute, Caltech, CA
112. October 2012: 50th Annual Allerton Conference on Communication, Control and Computing invited session on power systems, Monticello, IL
113. July 2012: CU Energy Day Workshop, Chinese University of Hong Kong
114. July 2012: Network Science Workshop, Chinese University of Hong Kong
115. June 2012: Federal Energy Regulatory Commission¿s (FERC) Conference: Increasing Real-Time and Day-Ahead Market Efficiency through Improved Software, Washington DC
116. June 2012: GreenMetrics 2012 Workshop (in conjunction with Sigmetrics), London, UK
117. May 2012: Center for Nonlinear Studies (CNLS) Annual Conference on "Optimization and Control for Smart Grids", Los Alamos National Laboratory, Santa Fe, NM
118. May 2012: Santa Fe Institute Workshop on "Power Grids as Complex Networks", Santa Fe, NM
119. March 2012: Annual Conference on Information Sciences and Systems (CISS), Princeton, NJ
120. March 2012: The 8th Annual Carnegie Mellon Conference on the Electricity Industry: Emerging Phenomena in Changing Electric Energy Systems, Pittsburgh, PA
121. Feb 2012: The 7th Annual Information Theory and Application Workshop, San Diego, CA
122. Jan 2012: Seventh Annual Coordinated Science Laboratory (CSL) Student Conference, University of Illinois, Urbana-Champaign, IL
123. December 2011: IEEE GLOBECOM Workshop on Smart Grid Communications and Networks (Keynote), Houston, TX
124. November 2011: Workshop on Energy Security and Resilient Control Systems, Marina del Ray, CA
125. October 2011: FIP WG7.3 Performance Conference (Keynote), Amsterdam, Netherlands
126. October 2011: IEEE Computer Communications Workshop (CCW), Hyannis, MA
127. Sept 2011: Alumni College 2010 "Practical Applications of Sustainable Resources", Caltech, Pasadena, CA

128. August 2011: Hamilton Institute Workshop Network Science Workshop, Dublin, Irland
129. August 2011: PURSUIT Summer School, Cambridge, England
130. June 2011: Santa Barbara Control Workshop on "Decision Dynamics and Control in MultiAgent Systems", UC, Santa Barbara, CA
131. May 2011: "IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid)," Panel, Newport Beach, CA
132. May 2011: "Dynamical Systems Approaches in Smart Power Grids" at SIAM conference on Application of Dynamical Systems, Snowbird, UT
133. May 2011: Workshop on Dynamics, Control and Pricing in Power Systems, Linnaeus Excellent Center, Lund University, Sweden
134. April 2011, EDGE Lab Open House, Princeton, NJ
135. March 2011: USC Rusch Honors Colloquium, University of Southern California, LA, CA
136. February 2011: Workshop on Cyber-Physical Applications in Smart Electric Power Systems, NCSU, Raleigh, NC
137. February 2011: The 6th Information Theory and Applications (ITA) Workshop, UCSD, San Diego, CA
138. January 2011: KACST Smart Grid Workshop, Riyadh, Saudi Arabia
139. November 2010: Southern California Symposium on Network Economics and Game Theory, Los Angeles, CA
140. November 2010: INFORMS Annual Meeting, Distributed Algorithm and Optimization, Austin, TX
141. November 2010: IEEE Workshop on "A Systems Approach Toward Green Energy Production and Adaptive Power Distribution", CSULB, Long Beach, CA
142. October 2010: DIMACS Workshop on Algorithmic Decision Theory for the Smart Grid, Rutgers University, Piscataway, NJ
143. October 2010: Southern California Edison Smart Grid Research Symposium, USC, Los Angeles, CA
144. March 2010: Workshop on Distributed Decisions via Games and Price Mechanisms, Lund University, Sweden
145. February 2010: The 5th Information Theory and Applications (ITA) Workshop, UCSD, San Diego, CA
146. Oct 2009: Southern California Symposium on Network Economics and Game Theory, Los Angeles, CA (panelist)
147. October 2009: INFORMS Annual Meeting, San Diego, CA
148. February 2009: The 2009 Information Theory and Applications Workshop, UCSD, San Diego, CA
149. November 2008: IPAM Workshop on New Mathematical Frontiers in Network Multi-Resolution Analysis, Institute for Pure and Applied Mathematics, UCLA, CA
150. October 2008: Workshop on the Frontiers in Distributed Communication, Sensing and Control, Yale University, New Haven, CT
151. August 2008: US-Korea Conference on Science, Technology and Entrepreneurship, San Diego, CA
152. June 2008: JASON Summer Study on Large Data, San Diego, CA

153. May 2008: IEEE ICC (International Conference on Communications), Panel on Transport Protocols in Next Generation Communications
154. April 2008: Workshop on The future of TCP: Train-wreck or Evolution? Stanford University, Palo Alto, CA
155. March 2008: ACCESS Industrial Workshop, KTH, Stockholm, Sweden
156. Jan 2008: The 2008 Information Theory and Applications Workshop, UCSD, San Diego, CA
157. Sept 2007: The 45th Annual Allerton Conference on Communication, Control, and Computing, Monticello, IL
158. Feb 2007: The Fifth International Workshop on Protocols for FAST Long-Distance Networks, ISI, Marina Del Rey, CA
159. Feb 2007: The IEEE 21st Annual Computer Communications Workshop (CCW), Pittsburgh, PA
160. Jan 2007: The 2007 Information Theory and Applications Workshop, UCSD, San Diego, CA
161. October 2006: The 44th Annual Allerton Conference on Communication, Control, and Computing, Monticello, IL
162. August 2006: International Workshop on Complex Systems and Networks (IWCSN 2006), Vancouver, BC, Canada
163. March 2006: IEEE Information Theory Workshop (ITW'2006), Punta del Este, Uruguay
164. March 2006: IRTF End-to-end Task Force Meeting, ISI/USC, Marina Del Rey, CA
165. December 2005: Workshop on QoS and Traffic Control, Ecole Normale Supérieure, Paris, France
166. November 2005: INFORMS Annual Meeting (Optimization and Games in Communication Networks Session), New Orleans, LA
167. November 2005: INFORMS Annual Meeting (Network Optimization Session), New Orleans, LA
168. July 2005: Workshop on the Complex Behavior of Adaptive, Network-Centric Systems, University of Maryland, College Park, MD
169. June 2005: Institute for Mathematics and Applications (IMA), Wireless Communications Workshop, Minniapolis, MN
170. May 2005: International ICFA Workshop on HEP Networking, Grids, and Digital Divide Issues for Global e-Science, Daegu, Korea
171. May 2005: SCMJ IT Workshop, Caltech, LA
172. March 2005: RAND Workshop on Network Science, Arlington, VA
173. Feb 2005: Internet2 Joint Tech Workshop, Salt Lake City, UT
174. February 2005: Distinguished Speaker Series in Information Technology, Rensselaer Polytechnic Institute, Troy, NY
175. Jan 2005: Computational Science Workshop for Underrepresented Groups, USC, Los Angeles, CA
176. October 2004: IEEE Computer Communication Workshop (CCW), Bonita Springs, FL
177. October 2004: Internet 0: Past, Present, and Future, The Center for Bits and Atoms, MIT, Boston, MA

178. September 2004: Fall Internet2 Member Meeting, Austin, TX
179. July 2004: Optical Network Testbeds Workshop, NASA Ames, CA
180. July 2004: 16th International Symposium on Mathematical Theory of Networks and Systems(MTNS 2004), K.U.Leuven, Belgium
181. July 2004: Workshop on Economics of Communication Networks, Montreal, Canada (presenter: Ao Tang)
182. March 2004: Distinguished Panel on Hot Research Topics in Computer Networking, University of Science and Technology, Hong Kong
183. February 2004: Institute for Mathematics and Applications (IMA), Workshop on Robustness in Complex Systems, Minniapolis, MN
184. November 2003: INRIA Workshop on Congestion Control, Paris, France
185. October 2003: IEEE Computer Communication Workshop (CCW), Laguna Beach, CA (presenter: David Wei)
186. October 2003: Allerton Conference, Monticello, IL (presenter: Ao Tang)
187. October 2003: Institute for Pure and Applied Mathematics (IPAM), Reunion Workshop on "Large Scale Communication Networks", Lake Arrowhead, CA
188. August 2003: Internet2 Joint Technology Meeting, Lawrence, KS
189. August 2003: Army Research Office Symposium on Science and Complex Adaptive Systems, Research Triangle Park, NC
190. July 2003: Algorithmic Game Theory and the Internet, Saarbrücken, Germany
191. July 2003: IEEE Information Theory Workshop, Hong Kong, China (Workshop cancelled due to SARS)
192. May 2003: CENIC (Corporation for Education Network Initiative in California) 2003 - On the Road to a Gigabit, Santa Barbara, CA
193. March 2003: High Energy Physics Data Grid Workshop at KEK (High Energy Accelerator Research Organization), Japan
194. October 2002: IEEE Information Theory Workshop, Bangalore, India
195. October 2002: Allerton Conference, Monticello, IL
196. October 2002: IEEE Computer Communication Networks, Santa Fe, NM
197. June 2002: Workshop on High-speed Networking, New York, NY
198. March 2002: Institute for Pure and Applied Mathematics (IPAM), Workshop on "Large Scale Communication Networks", UCLA, CA
199. February 2002: Decision and Control Symposium (IDC 2002), Adelaide, Australia
200. January 2002: Winter School on "Nonlinear Phenomena in Communication Networks", UCSD, San Diego, CA
201. December 2001: Winter Simulation Conference, Arlington, VA
202. October 2001: Allerton Conference, Monticello, IL
203. August 2001: Institute for Mathematics and Applications (IMA), Minniapolis, MN
204. March 2001: Center for Discrete Mathematics and Theoretical Computer Science (DIMACS), Rutgers University, NJ
205. March 2001: National Institute of Statistical Science (NISS), Research Triangular Park, NC

206. December 2000: First IEEE Pacific-Rim Conference on Multimedia, University of Sydney, Australia
207. October 2000: IEEE Computer Communication Networks (CCW), Captiva Island, FL
208. November 1999: INFORMS Fall 1999 Meeting, Philadelphia, PA
209. October 1999: IEEE Computer Communication Networks (CCW), Estes Park, CO
210. June 1997: The 9th INFORMS Applied Probability Conference, Boston, MA
211. April 1995: IEEE Information Theory Workshop, St. Louis, MO
212. March 1993: Interdisciplinary Workshop on Coordination and Complexity, Berkeley, CA

- **Invited seminars/colloquia**:

  ANU, Australia (9/2021), **Arizona State University** (10/2014, 9/2021), **Berkeley** (2/1998, 2/2001, 4/2002, 4/2006, 4/2012, 5/2014, 11/2014), **Boston University** (6/2001, 10/2003, 11/2011), **Caltech** (6/1999), **Cambridge University** (UK, 6/1999, 1/2019), **Chinese University of Hong Kong** (3/2004, 7/2012, 4/2016), **City University of Hong Kong** (4/2022) **Cornell** (11/1999, 10/2003, 2/2012, 3/2015, 11/2016, 10/2017, 11/2021), **ETH (Zurich, Switzerland)** (6/2016), **Georgia Tech** (6/1998, 9/2010, 2/2016, 11/2017), **Harvard** (9/2016), **Hong Kong University of Science & Technology** (10/2005, 8/2012), **KTH (Stockholm, Sweden)** (3/2008, 5/2017) **McGill** (4/2012), **Melbourne University, Australia** (7/2004, 12/2011, 9/2012, 8/2016, 8/2018, 6/2022), **MIT** (10/2003, 2/2007, 9/2016, 3/2022), **Monash University** (8/2018), **National Tsinghua University, Taiwan** (11/2012), **Northeastern** (11/2012), **Northwestern** (3/2017), **Peking University** (4/2022), **Polytechnic University** (11/1999), **Princeton** (11/1999, 10/2003), **Purdue** (10/2001), **RPI** (3/2002), **Shanghai Jiaotong University, China** (4/2011, 8/2012), **Skoltech, Moscow, Russia** (3/2014, 9/2015), **Stanford** (1/2002, 2/2004, 4/2012, 1/2014, 11/2016), **SUNY Buffalo** (1/2013), **Swinburne University, Australia** (7/2004, 12/2011, 9/2012), **Tsinghua University, China** (5/2008, 8/2012, 5/2015, 7/2015, 4/2016), **University of British Columbia** (2/2017), **University of Hong Kong** (8/2012, 7/2015), **UC Irvine** (10/1999, 4/2009, 4/2020), **UC LA** (8/1998, 10/1999, 2/2001, 1/2003, 11/2013), **UC Riverside** (11/2001, 11/2011), **UC San Diego** (3/2012, 4/2012, 3/2022), **UC Santa Cruz** (1/2021) **UIUC** (1/2012), **UMaryland** (College Park, 12/1999, 4/2004), **UMass** (Amherst, 12/1999), **UMichigan** (Ann Arbor, 3/2013, 9/2016), **UMinnesota** (Minneapolis, 9/2013), **UPenn** (3/2003), **USC** (11/2001, 1/2002, 7/2003, 12/2014, 11/2016), **UTexas** (Austin, 12/1999), **UTexas** (A&M, 9/2012), **UTexas** (San Antonio, 4/2018), **UToronto** (11/2015), **UWashington** (Seattle, 5/2008, 2/2014), **UWaterloo** (Canada, 10/2013), **UWisconson** (Madison, 4/2012), **Zhejiang University** (China, 8/2012, 3/2014, 6/2015, 4/2016, 6/2020 (online))

  Alstom Grid, GE (Seattle, 7/2016), **AT&T Labs** (NJ, 2/1998), **Bell Labs** (NJ, 2/1998, 6/2001, 2/2012), **Cisco** (CA, 10/2000, 6/2003, 2/2005), **Google** (CA, 6/2004), **HP Labs** (CA, 8/2004), **IBM T. J. Watson Research** (Yorktown Heights, NY, 10/2003), **IBM Research** (Almaden, CA, 8/2004), **IBM Research** (Dublin, Ireland, 4/2014), **IBM Research** (Melbourne, Australia, 8/2018), **Los Alamos National Lab** (NM, 4/2011, 8/2013), **Nortel Labs** (UK, 6/1999), **Pacific Northwest National Lab** (WA, 2/2016), **QualComm** (CA, 10/2009), **SUN** (CA, 6/2003), **Symantec** (CA, 8/2004), **Telstra Research Lab** (Australia, 8/1999)

Visits

- University of Melbourne, Australia, 8-10/2000, 7-8/2004, 7-8/2017, 7-9/2018, 4-8/2019
- Cornell Tech, New York, NY, 9 -12/2017

- Zhejiang University, Hangzhou, China, 3-5/2014, 3-5/2015, 6-7/2015, 4-5/2016
- Lund University, Lund, Sweden, 7-8/2010
- Lee Center for Advanced Networking, Caltech, CA, 10/1999
- Bell Labs, Murray Hill, 12/1998-1/1999
- Bell Labs, Holmdel, NJ, 12/1997-2/1998
- AT&T Labs, Shannon Lab, NJ, 12/1996-3/1997
- University of Science & Technology, Hong Kong, 2-4/1996

Mentoring/Service (seriously outdated)

- **PhD Graduates (Caltech after 2000)**:
  1. David Lapsley (PhD EE, 1999, Melbourne University), Lucent, Massachusetts (first job)
  2. Jiantao Wang (with Doyle), PhD CDS 2005, Goldman Sachs
  3. Lijun Chen (with Doyle), PhD CDS 2006, U Colorado, Boulder
  4. Lun Li (with Doyle), PhD CDS 2006, OpenX, Pasadena
  5. Mortada Meyhar, PhD EE 2006, Yahoo! (first job)
  6. Kevin Tang, PhD EE 2006, Cornell ECE
  7. David Wei, PhD CS 2006, Google (first job), Facebook
  8. Jayakrishnan Nair (with A. Wierman), PhD EE 2012, Indian Institute of Sciences
  9. Subhonmesh Bose, PhD EE 2014, UIUC ECE
  10. Na Li (with J. Doyle), PhD CDS 2014, Harvard EAS
  11. Zhenhua Liu (with A. Wierman), PhD CS 2014, SUNY Stony Brook
  12. Lingwen Gan, PhD EE 2015, Facebook (first job)
  13. Desmond Cai (with A. Wierman), PhD EE 2016, Singapore A*STAR (first job)
  14. Qiuyu Peng, PhD EE 2016, Google (first job)
  15. Changhong Zhao, PhD EE 2016, (first job: NREL; current: Chinese University of Hong Kong, IE)
  16. Niangjun Chen (with Wierman), PhD CS 2017, A*STAR
  17. Yujie Tang, PhD EE 2019, Harvard postdoc
  18. Daniel Linqi Guo, PhD CMS 2019 (Waltze Networks, Renaissance Tech)
  19. Zachary Lee, PhD EE 2021 (PowerFlex/EDF Renewables)
  20. Chen Liang, PhD CMS 2022 (finance)
  21. Fengyu Zhou, PhD EE 2022 (finance)
  22. Tongxin Li, PhD CMS 2022 (Chinese University of Hong Kong (Shenzhen))
- **MS Graduates**:
  - George Lee (MS, 2011, Caltech), FastSoft
  - Masoud Farivar (MSc, EE, 2010, Caltech)
  - Kevin Phan (MSc, EE, 2009, Caltech), then UCLA

- Cheng Hu (MSc, CS, 2006, Caltech), first position: Investment firm
- John Pongsajapan (MSc, CS, 2006, Caltech), first position: Google
- Craig Cameron (MSc, 2002, Caltech), first position: Melbourne University, Australia
- Sanjeewa Athuraliya (MSc, 2000, Caltech), first position: in New Zealand
- Youngmi Ohk (MSc, 1998, Melbourne University), first position: SCI Technology Lab, Australia

- **Current PhD students**: Lucien Werner (CMS 2017), Nicolas Christianson (CMS 2020), Yiheng Xie (CMS 2022 deferred)

- **Postdocs (excluding own students)**:
  - Guannan Qu CMI Fellow and Resnick Institute Fellow (Harvard, 2019 – 2021): Johns Hopkins EE
  - James Anderson (Oxford 2016 – December 2019): Columbia EE
  - Krishnamurthy Dvijotham, CMI Fellow (UW Seattle, 2014 – 2016): PNNL – DeepMind
  - Enrique Mallada, CMI Fellow (Cornell, 2013 – 2015): Johns Hopkins ECE
  - Yunjian Xu, CMI Fellow (MIT, 2012 – 2013): Singapore University of Technology and Design
  - Eilyan Bitar (Berkeley, 2011 – 2012): Cornell
  - Dennice Gayme (Caltech, 2011 – 2012): Johns Hopkins ME
  - Libin Jiang, CMI Fellow (Berkeley, 11/2010 – 2012): Qualcomm
  - Sachin Adlakha, CMI Fellow (Stanford, 9/2010 – 2013): startup
  - Chee-Wei Tan (Princeton, 11/2008 – 10/2009): City University of Hong Kong
  - Lachlan Andrew (RMIT, 10/2005 – 9/2008): Swinburne University, Melbourne
  - Bartek Wydrowski (Melbourne, 1/2004 – 12/2005): Google
  - Joon-Young Choi (SNU, Korea, 2/2004 – 2/2005)
  - Werner Almsberger (EPFL, 12/2002 – 6/2003)
  - Cheng Jin (Michigan, 7/2002 – 9/2005): FastSoft (Founder)
  - Ki-Baek Kim (SNU, Korea, 10/2001 – 2/2003)

- **Teaching**:
  Caltech:
  - Developed and taught ee/cs/est 135 Power Systems Analysis (since 2013)
  - Developed and taught networking courses CS/EE145ab and later cs/ee143, since 2000
  - Participated in CDS110 (2003, 2004) and CDS270

  Melbourne: introductory and advanced networking, digital communications, digital signal processing.

- **Service**: CS Department Steering Committee, 1/2002 – 10/2007

Grants

External grants

Total funding 2001–2018: more than $20M. *Only* external grants on which I'm the Caltech PI are listed.

1. **NSF CPS:** Adaptive Charging Network Research Portal (1932611), 9/2019–8/2022
2. **NSF ECCS:** Learning power grids from limited measurements: fundamental limits and practical algorithms (1931662), 9/2019–8/2022
3. **PNNL (DoE):** Next generation distribution system platform development, 2018–2019
4. **PNNL (DoE):** Safety-critical control of power networks, 2018–2019
5. **NSF CPS:** Demand and workload management for data centers with increased renewable penetration, (1739355, Prime: Arizona State), 2017–2020
6. **NSF CISE AitF:** Algorithmic challenges in smart grids: control, optimization & learning, (1637598), 2016–2020
7. **NSF: EPCN:** Design, stability and optimality of cyber-networks for frequency regulation in smart grids, (1619352), 2016–2019
8. **ARPA-E NODES**: Network Optimized Distributed Energy Systems, (DE-AR0000699, Prime: NREL), 2016–2019
9. **DTRA:** Adaptive algorithms for overload control under cascading failure in multilayer networks (Prime: Ohio State), 2014–2020
10. **ARPA-E GRID DATA:** Generating Realistic Information for the Development of Distribution and Transmission Algorithms, (DE-AR0000715, Prime: Michigan), 2016–2018
11. **NSF PFI AIR**: Optimal adaptive charging system, (1602119), 2016–2017
12. **Skoltech:** Energy systems, 2015–2018
13. **Los Alamos National Lab:** Smart grid research, 2013–16
14. **ARPA-E GENI:** Scalable real-time decentralized volt/var control, 2012–15
15. **Taiwan National Science Council:** Uncertainty mitigation in renewable integration, 2012–15
16. **Cisco:** Architectures, algorithms and models for smart connected societies, 2011
17. **SCE:** Smart grid research, 2009-2014
18. **NSF NetSE Large** (CNS-0911041): A theory of network architecture, with Candes, Chandy, Doyle and Murray, 2009–14
19. **ARO MURI** (Berkeley Prime Award W911NF-08-1-0233): Tools for the analysis and aesign of complex multi-scale networks, with Doyle, 2008–14
20. **Greentouch Consortium, Bell Labs, Alcatel-Lucent:** Energy efficient networking, 2011–14

21. **Okawa Foundation** Research Grant, 2011

22. **DoE** (DE-EE0002890): Power minimization techniques for networked datacenters, with Tang (Cornell) 2010–11

23. **ARO DURIP** (W911NF-08-1-0513): WAN-in-Lab at 10Gbps, with Andrew, 2008–09

24. **NSF NeTS** (CNS-0520349): Collaborative Research: Optimization and Games in Interdomain Routing, with Doyle and Zhang (UCLA), 2006

25. **NSF NeTS** (CNS-0435520): Counter-Intuitive Behavior in General Networks, 2005–07

26. **ARO Network Science**: Networked control systems, with Doyle, Murray, 2005–06

27. **NSF CRCD** (CNS-0417607): Control and Optimization of Communication Systems, with Chiang (Princeton), 2004–06

28. **ARO DURIP** (W911NF-04-1-0095): Hybrid WAN in Lab with Doyle, Newman, Psaltis, Yip, 2004–05

29. **NSF RI** (EIA-0303620): WAN in Lab with Doyle, Newman, Psaltis, Yip (Cisco), 2003–08

30. **NSF STI** (ANI-0230967): Multi-Gbps TCP: Data Intensive Networks for Science & Engineering, with Bunn, Doyle, Newman, 2002–05

31. **AFOSR** (F49620-03-1-0119): Large Scale Self-Organizing Information Distribution System, 2002–05

32. **ARO Networking Research**: Analytical Theory of Protocols, with Doyle, 2002–05

33. **NSF ITR** (ANI-0113425): Optimal and Robust TCP Congestion Control, with Doyle, 2001–04

34. **Cisco ARTI**:

    - University Research Program: 2002, 2003, 2011
    - WAN in Lab: 2005

35. **Misc**: Intel (2001), Microsoft (2001), Sun (2002), Juniper (2003), Level(3) (2003), Corning (2003)

Publications

Only refereed and invited articles are included. Some of the conferences (e.g., IEEE Infocom) have acceptance rate lower than or comparable to leading networking journals, e.g. 15%–25%.

Google Scholar : 42,150 citations, h-index = 92 (August, 2022)

Book

1. Steven H. Low. Analytical methods for network congestion control, Morgan and Claypool Publishers, July 2017

Journal/Book chapter/Magazine

1. N. Christianson, L. Werner, A. Wierman and S.H. Low. Dispatch-aware planning for feasible power system operation, *Electric Power Systems Research* (PSCC), 212, November 2022

2. Z. Ye, T. Li and S.H. Low. Towards balanced three-phase charging: Phase optimization in adaptive charging networks. *Electric Power Systems Research* (PSCC), 212, November 2022

3. Y. Yuan, S.H. Low, O. Ardakanian and C.J. Tomlin. Inverse power flow problem. *IEEE Transactions on Control of Network Systems*, to appear 2022

4. F. Zhou and S. H. Low. Conditions for exact convex relaxation and no spurious local optima. *IEEE Transactions on Control of Network Systems*, to appear 2022 (doi: 10.1109/TCNS.2021.3112758)

5. X. Chen, G. Qu, Y. Tang, S.H. Low and N. Li. Reinforcement learning for selective key applications in power systems: recent advances and future challenges. *IEEE Transactions on Smart Grid*, 13(4):2935–2958, July 2022

6. N. Chen, C. Kurniawan, Y. Nakahira, L. Chen and S.H. Low. Smoothed Least-Laxity-First algorithm for electric vehicle charging: online decision and performance analysis with resource augmentation. *IEEE Transactions on Smart Grid*, 13(3):2209–2217, May 2022

7. W. Huang, X. Pan, M. Chen and S.H. Low. DeepOPF-V: Solving AC-OPF Problems Efficiently. *IEEE Transactions on Power Systems*, 37(1):800–803, January 2022

8. Y. Tang, E. Dall'Anese, A. Bernstein and S.H. Low. Running primal-dual gradient method for time-varying nonconvex problems. *SIAM Journal on Control and Optimization*, 60(4):1970–1990, January 2022

9. S. H. Low. Theory-practice-entrepreneurship gap, President's Invited Column, *IEEE Control Systems Magazine*, pp. 8–12, December 2021

10. Tongxin Li, Bo Sun, Yue Chen, Zixin Ye, Steven H. Low and Adam Wierman. Learning-based predictive control via real-time aggregate flexibility. *IEEE Transactions on Smart Grid*, 12(6):4897–4913, November 2021 (doi: 10.1109/TSG.2021.3094719)

11. Z. J. Lee, S. Sharma, D. Johansson and S. H. Low. ACN-Sim: an open-source simulator for data-driven electric vehicle charging research. *IEEE Transactions on Smart Grid*, 12(6):5113–5123, November 2021 (doi: 10.1109/TSG.2021.3103156)

12. Zachary J. Lee , George Lee, Ted Lee, Cheng Jin, Rand Lee, Zhi Low , Daniel Chang, Christine Ortega, and Steven H. Low. Adaptive charging networks: a framework for smart electric vehicle charging. *IEEE Transactions on Smart Grid*, 12(5):4339-4350, September 2021 (doi: 10.1109/TSG.2021.3074437)

13. Z. J. Lee, S. Sharma and S. H. Low. Research tools for smart electric vehicle charging: an introduction to the adaptive charging network research portal. *IEEE Electrification Magazine*, 9(3):29–36, September 2021 (doi: 10.1109/MELE.2021.3093597)

14. L. Guo, C. Liang, A. Zocca, S. H. Low, and A. Wierman. Line failure localization of power networks, part I: non-cut outages. *IEEE Transactions on Power Systems*, 36(5):4140-4151, September 2021

15. L. Guo, C. Liang, A. Zocca, S. H. Low, and A. Wierman. Line failure localization of power networks, part II: cut set outages. *IEEE Transactions on Power Systems*, 36(5):4152–4160, September 2021

16. J. Ye, K. -C. Leung and S. H. Low. Combating bufferbloat in multi-bottleneck networks: theory and algorithms, *IEEE/ACM Transactions on Networking*, 29(4):1477–1493, August 2021 (doi: 10.1109/TNET.2021.3066505)

17. F. Zhou, A. S. Zamzam, S. H. Low and N. D. Sidiropoulos. Exactness of OPF relaxation on three-phase radial networks with Delta connections, *IEEE Transactions on Smart Grid*, 12(4):3232–3241, July 2021 (doi: 10.1109/TSG.2021.3066530)

18. M. Z. Liu, L. F. Ochoa and S. H. Low. On the implementation of OPF-based setpoints for active distribution networks, *IEEE Transactions on Smart Grid*, 12(4):2929-2940, July 2021 (doi: 10.1109/TSG.2021.3054387)

19. Fengyu Zhou, James Anderson and S. H. Low. The optimal power flow operator: theory and computation. *IEEE Transactions on Control of Network Systems*, 8(2):1010-1022, June 2021

20. Y. Chen, C. Zhao, S. H. Low and S. Mei. Approaching prosumer social optimum via energy sharing with proof of convergence, *IEEE Transactions on Smart Grid*, 12(3):2484–2495, May 2021 (doi: 10.1109/TSG.2020.3048402)

21. X. Zhou, M. Farivar, Z. Liu, L. Chen and S. H. Low. Reverse and forward engineering of local voltage control in distribution networks. *IEEE Transactions on Automatic Control*, 66(3):1116-1128, March 2021 (doi: 10.1109/TAC.2020.2994184)

22. Y. Chen, J. Anderson, K. Kalsi, A. D. Ames and S. H. Low. Safety-critical control synthesis for network systems with control barrier functions and assume-guarantee contracts. *IEEE Transactions on Control of Network Systems*, 8(1):487–499, March 2021 (doi: 10.1109/TCNS.2020.3029183)

23. Fengyu Zhou and S. H. Low. A note on branch flow models with line shunts. *IEEE Transactions on Power Systems*, 36 (1):537–540, January 2021

24. Chen Liang, Linqi Guo, Alessandro Zocca, Shuyue Yu, S. H. Low and Adam Wierman. An integrated approach for failure mitigation and localization in power systems. *Journal of Electric Power Systems Research (from PSCC 2020)*, 190, January 2021

25. Zachary J. Lee, John Pang and S. H. Low. Pricing EV charging service with demand charge. *Journal of Electric Power Systems Research (from PSCC 2020)*, 189, December 2020

26. Chenxi Sun, Tongxin Li, S. H. Low and Victor Li. Classification of electric vehicle charging time series with selective clustering. *Journal of Electric Power Systems Research (from PSCC 2020)*, 189, December 2020

27. Sebastian Puschel, Pierluigi Mancarella and S. H. Low. Separation event-constrained optimal power flow to enhance resilience in low-inertia power systems. *Journal of Electric Power Systems Research (from PSCC 2020)*, 189, December 2020

28. Yue Chen, Shengwei Mei, Fengyu Zhou, Steven H. Low, Wei Wei and Feng Liu. An energy sharing game with generalized demand bidding: model and properties. *IEEE Transactions on Smart Grid*, 11 (3):2055–2066, May 2020

29. Tongxin Li, Lucien Werner and S. H. Low. Learning graphs from linear measurements: fundamental tradeoffs and applications. *IEEE Transactions on Signal and Information Processing over Networks*, 6:163–178, February 2020

30. Zhaojian Wang, Shengwei Mei, Feng Liu, S. H. Low and Peng Yang. Distributed load-side control: coping with variation of renewable generations. *Automatica*, November 2019

31. Zhaojian Wang, Feng Liu, Ying Chen, S. H. Low and Shengwei Mei. Unified distributed control of stand-alone DC microgrids. *IEEE Transactions on Smart Grid*, 10(1):1013–1024, January 2019

32. Omid Ardakanian, Vincent W. S. Wong, Roel Dobbe, S. H. Low, Alexandra von Meier, Claire J. Tomlin and Ye Yuan. On identification of distribution grids. *IEEE Transactions on Control of Network Systems*, 6(3):950–960, September 2019

33. James Anderson, John C Doyle, S. H Low, Nikolai Matni. System level synthesis. *Annual Reviews in Control*, 47:364–393, May 2019

34. Y Tang, E Dall'Anese, A Bernstein and S. H. Low. A primal-dual gradient method for time-varying optimization with application to power systems. ACM SIGMETRICS Performance Evaluation Review 46(3): 92–92, 2019

35. Zhaojian Wang, Feng Liu, John Z. F. Pang, S. H. Low and Shengwei Mei. Distributed optimal frequency control considering a nonlinear network-preserving model. *IEEE Trans. on Power Systems*, 34(1):76–86, January 2019

36. Zhaojian Wang, Feng Liu, S. H. Low, Changhong Zhao and Shengwei Mei. Distributed frequency control with operational constraints, part II: network power balance, *IEEE Trans. on Smart Grid*, 10(1):53–64, January 2019

37. Zhaojian Wang, Feng Liu, S. H. Low, Changhong Zhao and Shengwei Mei. Distributed frequency control with operational constraints, part I: per-node power balance, *IEEE Trans. on Smart Grid*, 10(1):40–52, January 2019

38. Subhonmesh Bose and S. H. Low. Some emerging challenges in electricity markets. *Smart Grid Control: Overview and Research Opportunities* (Editors: J. Stoustrup, A. Annaswamy, A. Chakrabortty, Z. Qu), Springer, Cham, Switzerland, pp. 29-45, 2019

39. Yujie Tang, Emiliano Dall'Anese, Andrey Bernstein and S. H. Low. A Primal-Dual Gradient Method for Time-Varying Optimization with Application to Power Systems. *ACM SIGMETRICS Performance Evaluation Review*, 46(3), December 2018

40. Pengcheng You, S. H. Low, Liang Zhang, Ruilong Deng, Georgios B. Giannakis, Youxian Sun and Zaiyue Yang. Scheduling of EV battery swapping: Part II: distributed solutions. *IEEE Transactions on Control of Network Systems*, 5(4):1920–1930, December 2018

41. Pengcheng You, S. H. Low, Wayes Tushar, Guangchao Geng, Chau Yuen, Zaiyue Yang and Youxian Sun. Scheduling of EV battery swapping: Part I: centralized solution. *IEEE Transactions on Control of Network Systems*, 5(4):1887–1897, December 2018

42. Changhong Zhao, Enrique Mallada, S. H. Low and Janusz Bialek. Distributed plug-and-play optimal generator and load control for power system frequency regulation (invited), *International Journal of Electrical Power and Energy Systems*, 101:1–12, October 2018

43. Jia Li, Feng Liu, Zhaojian Wang, S. H. Low and Shengwei Mei. Optimal power flow in stand-alone DC microgrids, *IEEE Trans. on Power Systems*, 33(5):5496–5506, September 2018

44. Ashish Cherukuri, Enrique Mallada, S. H. Low and Jorge Cortes. The role of convexity on saddle-point dynamics: Lyapunov function and robustness, *IEEE Trans. on Automatic Control*, 63(8):2449–2464, August 2018

45. Yingjun Zhang and Changhong Zhao and Wanrong Tang and S. H. Low. Profit-maximizing planning and control of battery energy storage systems for primary frequency control, *IEEE Trans. on Smart Grid*, 9(2):712–723, March 2018

46. Qiuyu Peng and S. H. Low. Distributed optimal power flow algorithm for radial networks, I: balanced single phase case, *IEEE Trans. on Smart Grid*, 9(1):111–121, January 2018

47. Enrique Mallada, Changhong Zhao and S. H. Low. Optimal load-side control for frequency regulation in smart grids, *IEEE Trans. on Automatic Control*, 62(12): 6294–6309, December 2017

48. Daniel K. Molzahn, Florian Dörfler, Henrik Sandberg, S. H. Low, Sambuddha Chakrabarti, Ross Baldick, and Javad Lavaei. A survey of distributed optimization and control algorithms for electric power systems, *IEEE Trans. on Smart Grid*, special issue on Distributed control and efficient optimization methods for smart grid, 8(6):2941–2962, November 2017

49. Yujie Tang and S. H. Low. Optimal placement of energy storage in distribution networks, *IEEE Trans. on Smart Grid*, special issue on Distributed control and efficient optimization methods for smart grid, 8(6):3094–3103, November 2017

50. Yujie Tang, Krishnamurthy Dvijotham, and S. H. Low. Real-time optimal power flow, *IEEE Trans. on Smart Grid*, special issue on Distributed control and efficient optimization methods for smart grid, 8(6):2963–2973, November 2017

51. Yunjian Xu and S. H. Low. An efficient and incentive compatible mechanism for wholesale electricity markets, *IEEE Trans. Smart Grid*, 8(1):128–138, January 2017

52. Lingwen Gan and S. H. Low. An online gradient algorithm for optimal power flow on radial networks (invited), *IEEE Journal on Selected Areas in Communications*, Special issue on Emerging technologies in communications, 34(3):625–638, March 2016

53. Yunjian Xu, Na Li, and S. H. Low. Demand response with capacity constrained supply function bidding, *IEEE Trans. Power Systems*, 31(2):1377–1394, March 2016

54. Q. Peng, A. Walid, J. Hwang and S. H. Low. Multipath TCP: Analysis, Design, and Implementation, *IEEE/ACM Trans. Networking*, 24(1): 596 - 609, February 2016

55. J. U. Nair, M. Andreasson, L. L. H. Andrew, S. H. Low and J. C. Doyle. On channel failures, file fragmentation policies, and heavy-tailed completion times, *IEEE/ACM Trans. on Networking*, 24(1):529–541, February 2016

56. S. Bose, D. Gayme, K. M. Chandy and S. H. Low. Quadratically constrained quadratic programs on acyclic graphs with application to power flow, *IEEE Trans. on Control of Network Systems*, 2(3):278–287, September 2015

57. Qiuyu Peng, Yujie Tang, and Steven H. Low. Feeder reconfiguration in distribution networks based on convex relaxation of OPF, *IEEE Trans. on Power Systems*, 33(4):1793–1804, July 2015

58. Z. Liu, M. Lin, A. Wierman, S. H. Low and L. L. H. Andrew. Greening geographical load balancing, *IEEE/ACM Trans. on Networking*, 23(2):657–671, April 2015

59. S. Bose, S. H. Low, T. Teeraratkul and B. Hassibi. Equivalent relaxations of optimal power flow, *IEEE Trans. on Automatic Control*, 60(3):729 –742, March 2015

60. L. Gan, N. Li, U. Topcu and S. H. Low. Exact convex relaxation of optimal power flow in radial networks, *IEEE Trans. Automatic Control*, 60(1):72–87, January 2015

61. L. Gan and S. H. Low. Optimal power flow in direct current networks, *IEEE Trans. Power Systems*, 29(6): 2892–2904, November 2014

62. S. H. Low. Convex relaxation of optimal power flow, II: exactness, *IEEE Trans. on Control of Network Systems*, 1(2): 177–189, June 2014

63. S. H. Low. Convex relaxation of optimal power flow, I: formulations and equivalence, *IEEE Trans. on Control of Network Systems*, 1(1): 15–27, March 2014

64. C. Zhao, U. Topcu, N. Li and S. H. Low. Design and stability of load-side primary frequency control in power systems, *IEEE Trans. on Automatic Control*, 59(5):1177–1189, 2014

65. D.W.H. Cai, S. Adlakha, S. H. Low, P. De Martini and K. M. Chandy. *Impact of residential PV adoption on retail electricity rates*, Energy Policy, 62(C):830–843, 2013

66. C. Zhao, U. Topcu and S. H. Low. *Optimal load control via frequency measurement and neighborhood area communication*, IEEE Trans. on Power Systems, 28(4):3576–3587, November 2013

67. M. Farivar and S. H. Low. *Branch flow model: relaxations and convexification (Parts I and II)*, IEEE Trans. on Power Systems, 28(3):2554–2572, August 2013

68. L. Gan, U. Topcu and S. H. Low. *Optimal decentralized protocol for electric vehicle charging*, IEEE Trans. on Power Systems, 28(2):940–951, May 2013

69. L. Chen, T. Ho, M. Chiang, S. H. Low and J. C. Doyle. *Congestion control for Multicast Flows with Network Coding*, IEEE Trans. on Information Theory, 58 (9):5908–5921, September 2012

70. D. Cai, T. Q. S. Quek, C. W. Tan and H. Low. *Max-min SINR coordinated multipoint downlink transmission - duality and algorithms*, IEEE Trans. on Signal Processing, 2012.

71. K. Wang, F. Ciucu, C. Lin and S. H. Low. *A stochastic power network calculus for integrating renewable energy sources into the power grid*, IEEE Journal on Selected Areas in Communications, Smart Grid Series, July 2012

72. Z. Liu, M. Lin, A. Wierman, S. H. Low and L. L. H. Andrew. *Geographical load balancing with renewables*, ACM Sigmetrics Performance Evaluation Review (PER), March 2012

73. L. Chen, N. Li, L. Jiang and S. H. Low. *Optimal demand response: problem formulation and deterministic case* (invited), In Control and Optimization Theory for Electric Smart Grids, Aranya Chakrabortty and Marija Ilic, Editors, Springer 2012

74. J. Lavaei and S. H. Low. *Zero duality gap in optimal power flow problem*, IEEE Trans. on Power Systems, 27(1):92-107, February 2012

75. C. W. Tan, S. Friedland and S. H. Low, *Nonnegative matrix inequalities and their application to nonconvex power control optimization*, SIAM Matrix Analysis and Application, 2011

76. C. W. Tan, S. Friedland and S. H. Low, *Spectrum management in multiuser cognitive wireless networks: optimality and algorithm*, IEEE Journal on Selected Areas in Communications, 29:2, February 2011

77. A. Tang, L. Andrew, K. Jacobsson, K. Johansson, H. Hjalmarsson and S. H. Low. *Queue dynamics with window flow control*, IEEE/ACM Trans. on Networking, 18(5): 1422-1435, October 2010

78. L. Chen, S. H. Low and J. C. Doyle, *Random access game and medium access control design*, IEEE/ACM Trans. on Networking, 18(4): 1303–1316, 2010

79. A. Tang, X. Wei, S. H. Low and M. Chiang. *Equilibrium of heterogeneous congestion control: optimality and stability*, IEEE/ACM Trans. on Networking, 18(3): 844–857, 2010.

80. L. Chen, S. H. Low and J. C. Doyle. *Cross-layer design in multihop wireless networks* (Invited), Special Issue on Wireless for the Future Internet, Computer Networks Journal, 2010.

81. L.L.H. Andrew, S.H. Low and B. P. Wydrowski. *Understanding XCP: equilibrium and fairness*, IEEE/ACM Trans. on Networking, 17(6):1697–1710, 2009

82. K. Jacobsson, L.L.H. Andrew, A.K. Tang and S.H. Low. *An Improved Link Model for Window Flow Control and Its Application to FAST TCP*, IEEE Trans. on Automatic Control, 54(3):551–564, Mar 2009

83. Ao Tang, Lachlan L. H. Andrew, Mung Chiang and Steven H. Low. *Transport Layer*, in Encyclopedia of Computer Systems Engineering, Wiley, January 2009

84. X. Wang, K. Kar and S. H. Low. *End-to-end fair rate optimization in wire-cum-wireless networks*, Ad Hoc Networks, Elsevier, 7:473–485, 2009

85. T. Cui, L. Chen and S.H. Low. *A game-theoretic framework for medium access control*, IEEE Journal on Selected Areas in Communications, 26(7):1116-1127, September 2008

86. A. Tang, J. Wang, S. H. Low and M. Chiang. *Equilibrium of heterogeneous congestion control protocols: existence and uniqueness*, IEEE/ACM Trans. on Networking, 15(4):824-837, Aug 2007

87. M. Mehyar, D. Spanos, J. Pongsajapan, S. H. Low and R. M. Murray. *Asynchronous distributed averaging on communication networks*, IEEE/ACM Trans. on Networking, 15(3):512-520, Aug 2007

88. J. Y. Choi, K. Koo, J. S. Lee and S. H. Low. *Global finite-time convergence of TCP Vegas without feedback information delay*, International Journal of Control, Automation and Systems, February 2007

89. M. Chiang, S. H. Low, A. R. Calderbank and J. C. Doyle. *Layering as optimization decomposition: A mathematical theory of network architectures*, Proceedings of the IEEE, 95(1):255–312, January 2007

90. L. Chen, S. H. Low and J. C. Doyle. *Dual scheduling algorithm in a generalized switch: asymptotic optimality and throughput optimality*, in High-Performance Packet Switching Architectures, Itamar Elhanany and Mounir Hamdi (Eds.), Springer, 2007

91. D. X. Wei, C. Jin, S. H. Low and S. Hegde. *FAST TCP: motivation, architecture, algorithms, performance*, IEEE/ACM Trans. on Networking, 14(6):1246–1259, December 2006

92. W.-H. Wang, M. Palaniswami and S. H. Low. *Application-oriented flow control: fundamentals, algorithms and fairness*, IEEE/ACM Trans. on Networking, 14(6):1282–1291, December 2006

93. B. Wydrowski, S. Hegde, M. Suchara, R. Witt and S. H. Low. *Grid networks and TCP services, protocols, and technologies*, in Grid Networks: Enabling Grids with Advanced Communication Technology, F. Travostino, J. Mambretti, G. Karmous-Edwards (Eds.), John Wiley & Sons, May 2006

94. J. Wang, D. X. Wei, J-Y. Choi and S. H. Low. *Modeling and stability of FAST TCP* **(invited)**, in IMA Volumes in Mathematics and its Applications, Prathima Agrawal M. Andrew, P. J. Fleming, G. Yin, L. Zhang (Eds.), Springer, NY, 2006

95. A. Tang, J. Wang and S. H. Low. *Counter-intuitive throughput behaviors in networks under end-to-end control*, IEEE/ACM Trans. on Networking, 14(2):355-368, April 2006

96. A. Tang, J. Wang, S. Hegde and S. H. Low. *Equilibrium and fairness of networks shared by TCP Reno and Vegas/FAST* **(invited)**, Telecommunications Systems Journal special issue on High Speed Transport Protocols, 30(4): 417-439, December 2005

97. J. C. Doyle, D. Alderson, L. Li, S. H. Low, M. Roughan, S. Shalunov, R. Tanaka, and W. Willinger. *The "Robust Yet Fragile" Nature of the Internet*, Proceedings of the National Academy of Sciences, 102(40):14123–14475, Oct. 2005

98. H. Newman, J. Bunn, R. Cavanaugh, I. Legrand, S. H. Low, S. McKee, D. Nae, S. Ravot, C. Steenberg, X. Su, M. Thomas, F. van Lingen, Y. Xia. *The UltraLight Project: The Network as an Integrated and Managed Resource in Grid Systems for High Energy Physics and Data Intensive Science*, Computing in Science & Engineering, Special issue on Grid Computing, pages 38–47, November/December 2005

99. J. Wang, L. Li, S. H. Low and J. C. Doyle. *Cross-layer optimization in TCP/IP networks*, IEEE/ACM Trans. on Networking, 13(3):582–595, June 2005

100. F. Paganini, Z. K. Wang, J. C. Doyle and S. H. Low. *Congestion control for high performance, stability and fairness in general networks*, IEEE/ACM Trans. on Networking, 13(1):43–56, February 2005

101. C. Jin, D. X. Wei, S. H. Low, G. Buhrmaster, J. Bunn, D. H. Choe, R. L. A. Cottrell, J. C. Doyle, W. Feng, O. Martin, H. Newman, F. Paganini, S. Ravot, S. Singh. *FAST TCP: From Theory to Experiments*, IEEE Network, 19(1):4–11, January/February 2005

102. M. Mehyar, D. Spanos and S. H. Low. *Duality-based TCP congestion control with error analysis* **(invited)**, in Performance Evaluation and Planning Methods for the Next Generation Internet, André Girard, Brunilde Sansò and Felisa Vázquez-Abad (Eds.), Springer, 2005

103. D. H. Choe and S. H. Low. *Stabilized Vegas* **(invited)**, in Advances in Communication Control Networks, Lecture Notes in Control and Information Sciences , Vol. 308, Tarbouriech, Sophie; Abdallah, Chaouki; Chiasson, John (Eds.), Springer 2004

104. N. Duffield and S. H. Low. *Allocating commodity resources in aggregate traffic networks*, Performance Evaluation, 57(3):279–306, July 2004

105. A. Tang, J. Wang and S. H. Low. *Understanding CHOKe: throughput and spatial characteristics*, IEEE/ACM Trans. on Networking, 12(4):694–707, August 2004

106. S. H. Low and R. Srikant. *A mathematical framework for designing a low-loss, low-delay Internet* **(invited)**, Networks and Spacial Economics, special issue on "Crossovers between transportation planning and telecommunications", 4:75–101, March 2004

107. S. H. Low, F. Paganini, J. Wang and J. C. Doyle. *Linear Stability of TCP/RED and a Scalable Control* **(invited)**, Computer Networks Journal, 43(5):633-647, December 2003

108. J. C. Doyle, J. Carlson, S. H. Low, F. Paganini, G. Vinnicombe, W. Willinger, J. Hickey, P. A. Parrilo and L. Vandenberghe. *Robustness and the Internet: Theoretical foundations*, in *Robust design: a repertoire from biology, ecology, and engineering*, (E. Jen, ed.), Oxford University Press, 2003

109. F. Paganini, J. C. Doyle and S. H. Low. *A Control Theoretical Look at Internet Congestion Control*, in Multidisciplinary Research in Control: The Mohammed Dahleh Symposium 2002. Eds. L. Giarre' and B. Bamieh, Lecture Notes in Control and Information Sciences, N. 289, Springer-Verlag, Berlin, 2003

110. W.H. Wang, M. Palaniswami and S. H. Low. *Necessary and Sufficient Conditions for Optimal Flow Control in Multirate Multicast Networks*, IEE Proceedings - Communications, 150(5):385-390, October 2003

111. S. H. Low. *A Duality Model of TCP and Queue Management Algorithms*, IEEE/ACM Trans. on Networking, 11(4):525–536, August 2003

112. W.H. Wang, M. Palaniswami and S. H. Low. *Optimal Flow Control and Routing in Multiple-Path Networks*, Performance Evaluation, 52(2-3):119-132, 2003

113. S. H. Low. *Network flow control* **(invited)**, Encyclopedia of Telecommunications, John Proakis (Ed.), Wiley, pp. 1625–31, December 2002

114. A. Elwalid, C. Jin, S. H. Low and I. Widjaja. *MATE: Multi-protocol Adaptive Traffic Engineering*, Computer Networks Journal, Vol. 40 No. 6, 20 December 2002

115. S. H. Low, Larry Peterson and Limin Wang. *Understanding TCP Vegas: A Duality Model*, Journal of ACM, 49(2):207-235, March 2002

116. S. H. Low, F. Paganini and J. C. Doyle. *Internet Congestion Control* **(invited)**, IEEE Control Systems Magazine, 22(1):28-43, February 2002

117. Sanjeewa Athuraliya, Steven H. Low, Victor H. Li and Qinghe Yin. *REM: Active Queue Management* **(invited)**, IEEE Network, 15(3):48-53, May/June, 2001

118. Qinghe Yin and S. H. Low. *Convergence of REM flow control at a single link*, IEEE Communications Letters, 5(3):119-121, March 2001

119. N. F. Maxemchuk and S. H. Low. *Active Routing*, IEEE Journal on Selected Areas in Communications, 19(3):552-565, March 2001

120. S. H. Low and N. F. Maxemchuk. *Capacity of Text Marking Channel*, IEEE Signal Processing Letters, 7(12):345-347, December 2000

121. S. Athuraliya and S. H. Low. *Optimization Flow Control with Newton-Like Algorithm*, Journal of Telecommunication Systems, 15(3/4):345-358, December 2000

122. S. H. Low. *Equilibrium Bandwidth and Buffer Allocations for Elastic Traffics*, IEEE/ACM Trans. on Networking, 8(3):373-383, June, 2000

123. S. H. Low and D. E. Lapsley. *Optimization Flow Control, I: Basic Algorithm and Convergence*, IEEE/ACM Trans. on Networking, 7(6):861-874, Dec. 1999

124. J. T. Brassil, S. Low and N. F. Maxemchuk. *Copyright Protection for the Electronic Distribution of Text Documents* **(invited)**, Proceedings of the IEEE, 87(7):1181-1196, July 1999

125. S. H. Low. *Equilibrium Allocation and Pricing of Variable Resources Among User-Suppliers*, Performance Evaluation, 34(4):207-225, December 1998

126. S. H. Low and N. F. Maxemchuk. *Performance Comparison of Two Text Marking and Detection Methods*, IEEE Journal on Selected Areas in Communications, 16(4):561-572, May 1998

127. S. H. Low, N. F. Maxemchuk and A. Lapone. *Document Identification for Copyright Protection using Centroid Detection*, IEEE Trans. on Communications, 46(3):372-383, March 1998

128. S. H. Low and N. F. Maxemchuk. *A Collusion Problem and Its Solution*, Information and Computation (Academic Press), 140(2):158-182, February 1, 1998

129. S. H. Low, N. F. Maxemchuk and S. Paul. *Anonymous Credit Cards and Their Collusion Analysis*, IEEE/ACM Trans. on Networking, 4(6):809-816, December 1996 (IEEE William R. Bennett Prize for Best Original Paper in IEEE/ACM Transactions on Networking in 1996)

130. J. T. Brassil, A. K. Choudhury, D. M. Kristol, A. M. Lapone, S. Low, N. F. Maxemchuk and L. O'Gorman. *SEPTEMBER: Secure Electronic Publishing Trial*, IEEE Communications Magazine, 34(5):48-55, May 1996

131. S. H. Low and P. P. Varaiya. *Burst Reducing Servers in ATM Networks*, Queueing Systems: Theory and Applications, 20: 61-84, 1995

132. J. T. Brassil, S. H. Low, N. F. Maxemchuk and L. O'Gorman. *Electronic Marking and Identification Techniques to Discourage Document Copying* **(invited)**, IEEE Journal on Selected Areas in Communications, 13(8):1495-1504, October 1995

133. S. H. Low and P. P. Varaiya. *A New Approach to Service Provisioning in ATM Networks*, IEEE/ACM Trans. on Networking, 1(5):547-553, October 1993

134. S. H. Low. *Mixed Binomial Distribution - Idea and its Implementation*, Intel Technology Journal, April 1989

Conference

1. Y. Yuan, S.H. Low, O. Ardakanian and C.J. Tomlin. Inverse power flow problem. *Proc. 58nd Annual Allerton Conference on Communication, Control, and Computing*, invited session on power systems, Monticello, IL, Sept. 2022

2. S. H. Low. A three-phase power flow model and balanced network analysis. *Proc. 11th Bulk Power Systems Dynamics and Control Symposium (IREP)*, Banff, Canada, July 2022

3. Yue Chen, Changhong Zhao, S. H. Low and Shengwei Mei. Approaching prosumer social optimum via energy sharing with proof of convergence. *IEEE Power & Energy Society General Meeting*, Transactions Paper Session, July 2022

4. T. Li, R. Yang, G. Qu, G. Shi, C. Yu, A. Wierman and S.H. Low. Robustness and consistency in linear quadratic control with untrusted predictions. *Proc. ACM Meas. Anal. Comput. Syst.*, 6(1):Article 18, March 2022

5. G. Qu, C. Yu, S. Low and A. Wierman. Exploiting linear models for model-free nonlinear control: a provably convergent policy gradient approach. *Proc. 60th IEEE Conference on Decision and Control (CDC)*, Austin, TX, December 2021

6. Tongxin Li, Yue Chen, Bo Sun, Adam Wierman and S. H. Low. Information aggregation for constrained online control. *Proc. ACM SIGMETRICS (International Conference on Measurement and Modeling of Computer Systems)*, Virtual Conference (Beijing, China), June 2021

7. Lucien Werner, Adam Wierman and Steven H Low. Pricing flexibility of shiftable demand in electricity markets. *Proc. Twelfth ACM International Conference on Future Energy Systems (e-Energy)*, Virtual Conference (Italy), June 2021

8. F. Zhou and S. H. Low. A sufficient condition for local optima to be globally optimal, *Proc. 59th IEEE Conference on Decision and Control (CDC)*, December 2020 (doi: 10.1109 / CDC42340.2020.9303868)

9. Chen Liang, Fengyu Zhou, Alessandro Zocca, S. H. Low and Adam C. Wierman. Mitigating Cascading Failures via Local Responses. *Proc. IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids (SmartGridComm)*, Virtual Conference, November 2020

10. Andreas Venzke, Guannan Qu, S. H. Low and Spyros Chatzivasileiadis. Learning optimal power flow: worst-case guarantees for neural networks. *Proc. IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids (SmartGridComm)*, Virtual Conference, November 2020

11. Tianyu Zhao, Xiang Pan, Minghua Chen, Andreas Venzke and S. H. Low. DeepOPF+: A Deep neural network approach for DC optimal power flow for ensuring feasibility. *Proc. IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids (SmartGridComm)*, Virtual Conference, November 2020

12. Linqi Guo, Chen Liang, Alessandro Zocca, S. H. Low and Adam Wierman. A new approach to the mitigation and localization of failures in power systems. *Proc. 21st Power Systems Computation Conference (PSCC)*, Porto, Portugal (online), June–July 2020

13. Zachary J. Lee, John Pang and S. H. Low. Pricing EV charging service with demand charge. *Proc. 21st Power Systems Computation Conference (PSCC)*, Porto, Portugal (online), June–July 2020

14. Chenxi Sun, Tongxin Li, S. H. Low and Victor Li. Classification of electric vehicle charging time series with selective clustering. *Proc. 21st Power Systems Computation Conference (PSCC)*, Porto, Portugal (online), June–July 2020

15. Sebastian Puschel, Pierluigi Mancarella and S. H. Low. Separation event-constrained optimal power flow to enhance resilience in low-inertia power systems. *Proc. 21st Power Systems Computation Conference (PSCC)*, Porto, Portugal (online), June–July 2020

16. James Anderson, Fengyu Zhou, and Steven H. Low. Worst-case sensitivity of DC optimal power flow problems (invited). *Proc. American Control Conference (ACC)*, Denver, CO (online), July 2020

17. Tongxin Li, Steven H. Low and Adam Wierman. Real-time flexibility feedback for closed-loop aggregator and system operator coordination. *Proceedings of the Eleventh ACM International Conference on Future Energy Systems (e-Energy)*, Melbourne, Australia (online) June 2020

18. Bo Sun, Tongxin Li, Steven H. Low and Danny H.K. Tsang. ORC: An online competitive algorithm for recommendation and charging schedule in electric vehicle charging network. *Proceedings of the Eleventh ACM International Conference on Future Energy Systems (e-Energy)*, Melbourne, Australia (online) June 2020

19. Yujie Tang and S. H. Low. A second-order saddle point method for time-varying optimization. *Proc. IEEE Conference on Decision and Control (CDC)*, Nice, France, December 2019

20. Linqi Guo, Chen Liang, Alessandro Zocca, S. H. Low and Adam Wierman. Less is more: real-time failure localization in power systems. *Proc. IEEE Conference on Decision and Control (CDC)*, Nice, France, December 2019

21. Fengyu Zhou, Yue Chen and S. H. Low. Sufficient conditions for exact semidefinite relaxation of optimal power flow in unbalanced multiphase radial networks. *Proc. IEEE Conference on Decision and Control (CDC)*, Nice, France, December 2019

22. Tongxin Li, Lucien Werner and S. H. Low. Learning graph parameters from linear measurements: fundamental trade-offs and application to electric grids. *Proc. IEEE Conference on Decision and Control (CDC)*, Nice, France, December 2019

23. Zachary J. Lee, Daniel Johansson and Steven H. Low. ACN-Sim: an open-source simulator for data-driven electric vehicle charging research. *Proc. IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids (SmartGridComm)*, Beijing, China, October 2019

24. Fengyu Zhou, James Anderson and S.H. Low. Differential Privacy of Aggregated DC Optimal Power Flow Data. *Proc. IEEE American Control Conference (ACC)*, Philadelphia, PA, July 2019

25. Yuxiao Chen, James Anderson, Karan Kalsi, S. H. Low and Aaron D. Ames. Compositional set invariance in network systems with assume-guarantee contracts. *Proc. IEEE American Control Conference (ACC)*, Philadelphia, PA, July 2019

26. Zachary J Lee, Tongxin Li and S. H. Low. ACN-Data: analysis and applications of an open EV charging dataset. *Proceedings of the Tenth ACM International Conference on Future Energy Systems (e-Energy)*, Phoenix, AZ, June 2019

27. Linqi Guo, Changhong Zhao and S. H. Low. Graph Laplacian spectrum and primary frequency regulation, *Proc. of the IEEE Conference on Decision and Control*, Miami, FL, December 2018

28. Linqi Guo, Chen Liang, Alessandro Zocca, S. H. Low and Adam Wierman. Failure localization in power systems via tree partitions, *Proc. of the IEEE Conference on Decision and Control*, Miami, FL, December 2018

29. Yujie Tang, Emiliano Dall'Anese, Andrey Bernstein and S. H. Low. A feedback-based regularized primal-dual gradient method for time-varying nonconvex optimization, *Proc. of the IEEE Conference on Decision and Control*, Miami, FL, December 2018

30. Zachary J. Lee, Daniel Chang, Cheng Jin, George Lee, Rand Lee, Ted Lee and S. H. Low. Large-scale adaptive electric vehicle charging, *International Conference on Communications, Control, and Computing Technologies for Smart Grids (SmartGridComm)*, Aalborg, Denmark, October 2018

31. O.O. Khamisov, T. S. Chernova, J.W. Bialek and S. H. Low. Corrective control: stability analysis of Unified Controller combining frequency control and congestion management (invited), *Porc. of Conference on Sustainable Energy Supply and Energy Storage Systems – NEIS 2018*, Hamburg, Germany, September 2018

32. James Anderson, Fengyu Zhou and S. H. Low. Disaggregation for networked power systems, *Proc. of the Power Systems Computation Conference (PSCC)*, Dublin, Irland, June 2018

33. Linqi Guo, Changhong Zhao and S. H. Low. Cyber network design for secondary frequency regulation: a spectral approach, *Proc. of the Power Systems Computation Conference (PSCC)*, Dublin, Irland, June 2018

34. Yujie Tang and S. H. Low. Distributed algorithm for time-varying optimal power flow, *Proc. of the IEEE Conference on Decision and Control*, Melbourne, Australia, December 2017

35. Linqi Guo and S. H. Low. Spectral characterization of controllability and observability for frequency regulation dynamics, *Proc. of the IEEE Conference on Decision and Control*, Melbourne, Australia, December 2017

36. Pengcheng You, John Pang, Minghua Chen, S. H. Low and Youxian Sun. Battery swapping assignment for electric vehicles: a bipartite matching approach, *Proc. of the IEEE Conference on Decision and Control*, Melbourne, Australia, December 2017

37. John C. Doyle, Nikolai Matni, Yuh-Shyang Wang, James Anderson and S. H. Low. System level synthesis: A tutorial, *Proc. of the IEEE Conference on Decision and Control*, Melbourne, Australia, December 2017

38. Linqi Guo, Chen Liang and S. H. Low. Monotonicity Properties and Spectral Characterization of Power Redistribution in Cascading Failures, *Proc. of the 55th Allerton Conference on Communication, Control, and Computing*, Monticello, IL, Oct 2017

39. Changhong Zhao, Emiliano Dall'Anese and S. H. Low. Convex relaxation of OPF in multiphase radial networks with Delta connection, *Proc. of the 10th Bulk Power Systems Dynamics and Control Symposium (IREP)*, Espinho, Portugal, August 2017

40. Linqi Guo, Karl F. Erliksson and S. H. Low. Optimal online adaptive electric vehicle charging. *Proc. of the IEEE Power and Energy Society General Meeting*, Chicago, IL, July 2017

41. Y. Nakahira, N. Chen, L. Chen and S. H. Low. Smoothed Least-laxity-first Algorithm for EV Charging. *Proc. of the 8th International Conference on Future Energy Systems (ACM e-Energy)*, Hong Kong, May 2017

42. Zhaojian Wang, Feng Liu, S. H. Low, Changhon Zhao and Shengwei Mei. Decentralized optimal frequency control of interconnected power systems with transient constraints, *Proc. of the IEEE Conference on Decision and Control (CDC)*, Las Vegas, NV, December 2016

43. Yuejie Tang and S. H. Low. Optimal placement of energy storage in distribution networks, *Proc. of IEEE Conference on Decision and Control (CDC)*, Las Vegas, NV, December 2016

44. George Lee, Ted Lee, Zhi Low, Steven H Low and Christine Ortega. Adaptive charging network for electric vehicles, *Proc. of the IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, Washington, DC, December 2016

45. Ashish Cherukuri, Enrique Mallada, Steven Low, Jorge Cortés. The role of strong convexity-concavity in the convergence and robustness of the saddle-point dynamics, *Proc. of the 54th Allerton Conference on Communication, Control, and Computing*, Monticello, IL, Oct 2016

46. Pengcheng You, Steven H. Low, Zaiyue Yang, Yongmin Zhang and Lingkun Fu. Real-time recommendation algorithm of battery swapping stations for electric taxis *Proc. IEEE Power and Energy Society General Meeting (PESGM)*, Boston, MA, July 2016

47. Krishnamurthy Dvijotham, Michael Chertkov and Steven H. Low. Monotone operator approach to power flow solutions, *Proc. of IEEE American Control Conference*, Boston, MA, July 2016

48. Changhong Zhao, Enrique Mallada, S. H. Low and Janusz Bialek. A Unified Framework for Frequency Control and Congestion Management, *Proc. of the 19th IEEE Power Systems Computation Conference (PSCC)*, Genoa, Italy, June 2016

49. Qiuyu Peng and S. H. Low. Distributed algorithm for optimal power flow on an unbalanced radial network, *Proc. of IEEE Conference on Decision and Control (CDC)*, Osaka, Japan, December 2015

50. Krishnamurthy Dvijotham, Michael Chertkov and Steven H. Low. A differential analysis of the power flow equations *Proc. of IEEE Conference on Decision and Control (CDC)*, Osaka, Japan, December 2015

51. Changhong Zhao, Enrique Mallada and S. H. Low. Distributed generator and load-side secondary frequency control in power networks, *Proc. of the Conference on Information Sciences and Systems (CISS)*, Baltimore, MD, March 2015

52. Subhonmesh Bose, Desmond Cai, S. H. Low and Adam Wierman. The role of a market maker in networked Cournot competition, *Proc. of the 53rd IEEE Conference on Decision and Control*, Los Angeles, CA, December 2014

53. Niangjun Chen, Lingwen Gan, S. H. Low and Adam Wierman. Distributional analysis for model predictive deferrable load control, *Proc. of the 53rd IEEE Conference on Decision and Control*, Los Angeles, CA, December 2014

54. Qiuyu Peng and S. H. Low. Distributed algorithm for optimal power flow on a radial network, *Proc. of the 53rd IEEE Conference on Decision and Control*, Los Angeles, CA, December 2014

55. Changhong Zhao and S. H. Low. Optimal decentralized primary frequency control in power networks, *Proc. of the 53rd IEEE Conference on Decision and Control*, Los Angeles, CA, December 2014

56. Enrique Mallada, Changhong Zhao and S. H. Low. Fair load-side control for frequency regulation in smart grids, *Proc. of the 52nd Allerton Conference on Communication, Control, and Computing*, Monticello, IL, Sept/Oct 2014

57. Lingwen Gan and S. H. Low. Convexification of AC optimal power flow (invited), *Proc. of the 18th Power Systems Computation Conference (PSCC)*, Wroclaw, Poland, August 2014.

58. Lingwen Gan and S. H. Low. Convex relaxations and linear approximation for optimal power flow in multiphase radial networks, *Proc. of the 18th Power Systems Computation Conference (PSCC)*, Wroclaw, Poland, August 2014.

59. P. Panciatici, M.C. Campi, S. Garatti, S.H. Low, D.K. Molzahn, A.X. Sun, L. Wehenkel. Advanced optimization methods for power systems, *Proc. of the 18th Power Systems Computation Conference (PSCC)*, Wroclaw, Poland, August 2014.

60. E. Mallada and S. H. Low. Distributed frequency-preserving optimal load control (invited), *Proc. 19th IFAC World Congress*, Cape Town, South Africa, August 2014

61. Qiuyu Peng, Anwar Walid, Minghua Chen and S. H. Low. Energy Efficient Multipath TCP for Mobile Devices, *Proc.15th ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc)*, Philadelphia, PA, August 2014

62. Chengdi Lai, S. H. Low, Ka-Cheong Leung and Victor O. K. Li. Pricing link by time, *Proc. ACM Sigmetrics*, Austin, TX, June 2014

63. Zhenhua Liu, Iris Liu, Steven Low and Adam Wierman. Pricing Data Center Demand Response, *Proc. ACM Sigmetrics*, Austin, TX, June 2014

64. Lingwen Gan and S. H. Low. Chordal relaxation of OPF for multiphase radial networks (invited), *Proc. IEEE International Symposium of Circuits and Systems*, Melbourne, Australia, June 2014.

65. Na Li, Lijun Chen, Changhong Zhao and Steven Low. Connecting Automatic Generation Control and economic dispatch from an optimization view, *Proc. IEEE American Control Conference (ACC)*, Protland, OR, June 2014

66. Lingwen Gan, Na Li, Ufuk Topcu and Steven H. Low. *Optimal power flow in distribution networks*, Proc. IEEE Conference on Decision and Control (CDC), Florence, Italy, December 2013

67. Lingwen Gan and Steven H. Low. *Optimal power flow in DC networks*, Proc. IEEE Conference on Decision and Control (CDC), Florence, Italy, December 2013

68. Qiuyu Peng and Steven H. Low, *Optimal feeder reconfiguration in distribution network*, Proc. IEEE Conference on Decision and Control (CDC), Florence, Italy, December 2013

69. Masoud Farivar, Lijun Chen and Steven H. Low, *Equilibrium of local voltage control in distribution systems*, Proc. IEEE Conference on Decision and Control (CDC), Florence, Italy, December 2013

70. Chengdi Lai and Steven H. Low, *The redistribution of power flow in cascading failures* (invited), Proc. 51st Annual Allerton Conference on Communication, Control, and Computing, Monticello, IL, October 2013

71. Wuhan Desmond Cai, Yunjian Xu and Steven H. Low, *Optimal investment of conventional and renewable generation assets*, Proc. 51st Annual Allerton Conference on Communication, Control, and Computing, Monticello, IL, October 2013

72. Steven H. Low, *Convex relaxation of optimal power flow: a tutorial*, Proc. Bulk Power System Dynamics and Control (IREP) Symposium, Rethymnon, Greece, August 2013

73. L. Gan, A. Wierman, U. Topcu, N. Chen and S. H. Low. *Real-time Deferrable Load Control: Handling the Uncertainties of Renewable Generation*, Proceedings of the Fourth International Conference on Future Energy Systems (e-Energy '13), Berkeley, CA, 2013

74. Qiuyu Peng, Anwar Walid and Steven H. Low. *Multi-path TCP algorithms: theory and design*, Proc. ACM SIGMETRICS, Pittsburgh, PA, June 2013

75. Masoud Farivar and Steven H. Low. *Branch flow model: relaxations and convexification* (invited paper), Proc. 51st IEEE Conference on Decision and Control, Maui, HI, December 2012

76. Lingwen Gan, Na Li, Ufuk Topcu and Steven Low. *On the exactness of convex relaxation for optimal power flow in tree networks*, Proc. 51st IEEE Conference on Decision and Control, Maui, HI, December 2012

77. E.Y. Bitar and S. Low. *Pricing of deferrable electric power service* (invited paper), Proc. 51st IEEE Conference on Decision and Control, Maui, HI, December 2012

78. Na Li, Lingwen Gan, Steven Low and Lijun Chen. *Demand Response in Radial Distribution Networks*, Proc. 46th Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, November 2012

79. Bose Subhonmesh, Steven Low and K. Mani Chandy *Equivalence of branch flow and bus injection models* (invited), Proc. 50th Annual Allerton Conference on Communication, Control, and Computing, Monticello, IL, October, 2012,

80. Lingwen Gan, Ufuk Topcu and S. H. Low. *Stochastic distributed protocol for electric vehicle charging with discrete charging rate*, Proc. IEEE PES General Meeting, San Diego, CA, July 2012

81. Changhong Zhao, Ufuk Topcu and S. H. Low. *Fast Load Control with Stochastic Frequency Measurement*, Proc. IEEE PES General Meeting, San Diego, CA, July 2012

82. Lingwen Gan, Anwar Walid and S. H. Low. *Energy efficient congestion control*, Proc. ACM Sigmetrics, London, UK, June 2012

83. Changhong Zhao, Ufuk Topcu and S. H. Low. *Frequency-Based Load Control in Power Systems*, Proc. American Control Conference, Montréal, Canada, June 2012

84. Desmond W. H. Cai, Chee Wei Tan and S. H. Low. *Optimal max-min fairness rate control in wireless networks: Perron-Frobenius characterization and algorithms*, Proc. IEEE Infocom, Orlando, FL, March 2012

85. L. Jiang and S. H. Low. *Multi-period optimal procurement and demand responses in the presence of uncertain supply* (invited), Proc. IEEE Conference on Decision and Control (CDC), Orlando, FL, Dec 2011

86. L. Gan, U. Topcu and S. H. Low. *Optimal decentralized protocol for electric vehicle charging*, Proc. IEEE Conference on Decision and Control (CDC), Orlando, FL, Dec 2011

87. M. Farivar, C. R. Clarke, S. H. Low and K. M. Chandy. *Inverter VAR control for distribution systems with renewables*, Proc. IEEE SmartGridComm Conference, Brussels, Belgium, October 2011

88. D. Bakken, A. Bose, K. M. Chandy, P. P. Khargonekar, A. Kuh, S. H. Low, A. von Meier, K. Poolla, P. P. Varaiya and F. Wu. *GRIP - grids with intelligent periphery: control architectures for Grid2050*, Proc. IEEE SmartGridComm Conference, Brussels, Belgium, October 2011

89. Kai Wang, Chuang Lin and S. H. Low. *How Stochastic Network Calculus Concepts Help Green the Power Grid*, Proc. IEEE SmartGridComm Conference, Brussels, Belgium, October 2011

90. Rui Huang, Ufuk Topcu, S. H. Low, K. Mani Chandy. *Optimal design of hybrid energy system with PV/wind turbine/storage: a case study*, Proc. IEEE SmartGridComm Conference, Brussels, Belgium, October 2011

91. S. Bose, D. Gayme, S. H. Low and K. M. Chandy. *Optimal power flow over tree networks*, Proc. Allerton Conference on Communication, Control and Computing, Monticello, IL, September 2011

92. L. Jiang and S. H. Low. Energy procurement and real-time demand response with uncertain renewable energy, Proc. Allerton Conference on Communication, Control and Computing, Monticello, IL, September 2011

93. J. Lavaei, A. Rantzer and S. H. Low. *Power flow optimization using positive quadratic programming*, Proceedings of the 18th IFAC World Congress, Milano, Italy, August 2011

94. N. Li, L. Chen and S. H. Low. *Optimal demand response based on utility maximization in power networks*, Proceedings of the 2011 IEEE Power & Energy Society General Meeting, Detroit, MI, July 2011

95. S. Sojoudi and S. H. Low. *Optimal charging of plug-in hybrid electric vehicles in smart grids*, Proceedings of the 2011 IEEE Power & Energy Society General Meeting, Detroit, MI, July 2011

96. Z. Liu, M. Lin, A. Wierman, S. H. Low and L. L. H. Andrew. *Greening geographical load balancing*, Proceedings of ACM Sigmetrics, San Jose, CA, June 2011

97. Desmond W. H. Cai, Tony Q. S. Quek, Chee Wei Tan and S. H. Low. *Max-min weighted SIR in coordinated multicell MIMO downllink*, Proc. of IEEE WiOpt Symposium, Princeton, NJ, May 2011

98. S. Sojoudi, S. H. Low and J. C. Doyle. *Effect of buffers on stability of Internet congestion controllers*, Proceedings of IEEE Infocom Mini-conference, Shanghai, China, April 2011

99. K. M. Chandy, S. H. Low, U. Topcu and H. Xu. *A simple optimal power flow model with energy storage*, Proceedings of IEEE CDC (Conference on Decision and Control), Atlanta, GA, Dec 2010

100. J. Lavaei and S. H. Low. *Relationship between power loss and network topology in power systems* (poster), Proceedings of IEEE CDC (Conference on Decision and Control), Atlanta, GA, Dec 2010

101. J. Lavaei and S. H. Low. *Zero duality gap in optimal power flow problem (invited)*, Proceedings of Allerton Conference on Communication, Control and Computing, Monticello, IL, September - October 2010

102. H. Xu, U. Topcu, S. H. Low, C. Clarke, and M. Chandy, *Load-shedding probabilities of power systems with renewable power generation and energy storage (invited)*, Proceedings of Allerton Conference on Communication, Control and Computing, Monticello, IL, September - October 2010

103. L. Chen, N. Li, S. H. Low and J. C. Doyle. *Two market models for demand response in power networks*, IEEE SmartGridComm, NIST, MD, October 2010

104. Javad Lavaei, John C. Doyle and Steven H. Low. *Utility functionals associated with available congestion control algorithms*, Proceedings of the IEEE Infocom, San Diego, CA, March 2010

105. Jayakrishnan Nair, Martin Andreasson, Lachlan L. H. Andrew, Steven H. Low, and John C. Doyle. *File fragmentation over an unreliable channel*, Proceedings of the IEEE Infocom, San Diego, CA, March 2010

106. Javad Lavaei, John C. Doyle and Steven H. Low *Congestion control algorithms from optimal control perspective*, Proceedings of IEEE CDC (Conference on Decision and Control), Shanghai, China, Dec 2009

107. Meng Wang, Chee Wei Tan, Ao Tang, Steven H. Low. *How bad is single-path routing*, Proceedings of IEEE Globecom, Honolulu, Hawaii, Nov 2009

108. Martin Suchara, Lachlan L. H. Andrew, Ryan Witt, Krister Jacobsson, Bartek P. Wydrowski and Steven H. Low. *Implementation of Provably Stable MaxNet*, Proceedings of Broadnets, London, UK, 8-11 Sept 2008

109. Ao Tang, Lachlan L. H. Andrew, Krister Jacobsson, Karl H. Johansson, Steven H. Low and Håken Hjalmarsson. *Window Flow Control: Macroscopic Properties from Microscopic Factors*, Proceedings of IEEE INFOCOM, Phoenix, AZ, 15-17 Apr 2008

110. Krister Jacobsson, Lachlan L. H. Andrew, Ao Tang, Karl H. Johansson, Steven H. Low and Håken Hjalmarsson. *ACK-Clocking Dynamics: Modelling the Interaction between Windows and the Network*, Proceedings of IEEE INFOCOM Minisymposium, Phoenix, AZ, 15-17 Apr 2008

111. Eui-woong Lee, David Buchfuhrer, Lachlan L. H. Andrew, Ao Tang and S. H. Low. *Progress on Pricing with Peering* (invited), Proceedings of Conference on Information Sciences and Systems (CISS), Princeton, NJ, 19-21 Mar 2008

112. L. Chen, S. H. Low and J. C. Doyle. *Contention Control: A Game-theoretic Approach*, Proceedings of IEEE Conference on Decision and Control (CDC), New Orleans, LA, 12-14 Dec 2007

113. Tao Cui, Lijun Chen, Tracey Ho, Steven H. Low and Lachlan L. H. Andrew. *Opportunistic Source Coding for Data Gathering in Wireless Sensor Networks*, in Proceedings of IEEE Mobile Ad-hoc and Sensor Systems (MASS), Pisa, Italy, 8-11 Oct 2007 **(Best Paper Award)**

114. Ao Tang, Krister Jacobsson, Lachlan L. H. Andrew and Steven H. Low. *An accurate link model and its application to stability analysis of FAST TCP*, Proceedings of IEEE Infocom, pp.161-169. Anchorage, Alaska, 6-12 May 2007

115. Lijun Chen, Tracey Ho, Steven H. Low, Mung Chiang and John C. Doyle. *Optimization based rate control for multi-cast with network coding*, Proceedings of IEEE Infocom, pp.1163 - 1171. Anchorage, Alaska, 6-12 May 2007

116. John Pongsajapan and Steven H. Low. *Reverse engineering TCP/IP-like networks using delay-sensitive utility functions*, Proceedings of IEEE Infocom, pp.418-426. Anchorage, Alaska, 6-12 May 2007

117. G. S. Lee, L. Andrew, A. Tang, S. H. Low. *WAN-in-Lab: motivation, deployment and experiments*, Proceedings of the 5th Workshop on Protocols for Fast Long-Distance Networks (PFLDnet), pp.85-90, ISI, Marina Del Rey, CA, 7-9 Feb 2007

118. J. Y. Choi, K. Koo, D. X. Wei, J. S. Lee and S. H. Low. *Global exponential stability of FAST TCP*, Proceedings of the 45th IEEE Conference on Decision and Control, San Diego, CA, Dec 2006

119. A. Tang, D. X. Wei, S. H. Low and M. Chiang. *Heterogeneous Congestion Control: Efficiency, Fairness and Design*, Proceedings of the IEEE International Conference on Network Protocols (ICNP), Santa Barbara, CA, Nov 2006

120. Mung Chiang, Steven H. Low, A. R. Calderbank and John C. Doyle. *Layering as Optimization Decomposition:Questions and Answers*, Proceedings of MILCOM (Military Communications Conference), pp. 1-10. 23-25 Oct 2006

121. Ao Tang, David Wei, Steven H. Low and Mung Chiang. *Heterogeneous Congestion Control* (invited), Proceedings of Allerton Conference on Communication, Control and Computing, Monticello, IL, Sept 2006

122. L. Chen, S. H. Low, M. Chiang and J. C. Doyle. *Optimal cross-layer congestion control, routing and scheduling design in ad hoc wireless networks*, Proceedings of the IEEE Infocom, Barcelona, Spain, April 2006

123. L. Chen, S. H. Low and J. C. Doyle. *On Asymptotic Optimality of Dual Scheduling Algorithm in A Generalized Switch*, Proceedings WiOpt, pp. 1-7. Boston, MA, 3-6 Apr 2006

124. H. Newman, J. Bunn, D. Bourilkov, R. Cavanaugh, I. Legrand, S. H. Low, S. McKee, D. Nae, S. Ravot, C. Steenberg, X. Su, M. Thomas, F. van Lingen and Y. Xia. *The Motivation, Architecture and Demonstration of the UltraLight Network Testbed*, Proceedings of CESNET, Prague, Czech Republic, 6-8 Mar 2006

125. Joon-Young Choi, Kyungmo Koo, Jin S. Lee and Steven Low. *Global Stability of FAST TCP in Single-Link Single-Source Network*, Proceedings of 44th Annual IEEE Conference on Decision and Control, Seville, Spain, December 2005

126. Mortada Mehyar, Demetri Spanos, John Pongsajapan, Steven Low and Richard M. Murray. *Distributed Averaging on Asynchronous Communication Networks*, Proceedings of 44th Annual IEEE Conference on Decision and Control, Seville, Spain, December 2005

127. A. Tang, J. Wang, S. H. Low and M. Chiang. *Equilibrium of heterogeneous congestion control protocols*, Proceedings of IEEE Infocom, Miami, FL, March 2005

128. J. Wang, D. X. Wei and S. H. Low. *Modeling and stability of FAST TCP*, Proceedings of IEEE Infocom, Miami, FL, March 2005

129. L. Chen, S. H. Low and J. C. Doyle. *Joint congestion control and media access control design for wireless ad hoc networks*, Proceedings of IEEE Infocom, Miami, FL, March 2005

130. S. H. Low, L. L. H. Andrew and B. P. Wydrowski. *Understanding XCP: equilibrium and fairness*, Proceedings of IEEE Infocom, Miami, FL, March 2005

131. J. Wang, A. Tang and S. H. Low. *Local stability of FAST TCP*, Proceedings of 43rd Annual IEEE Conference on Decision and Control, Paradise Island, Bahamas, Dec 2004

132. A. Papachristodoulou, J. C. Doyle and S. H. Low. *Analysis of TCP/AQM Protocol Models in the Form of Functional Differential Equations*, Proceedings of 43rd Annual IEEE Conference on Decision and Control, Paradise Island, Bahamas, Dec 2004

133. S. H. Low. *Utility maximization, routing, fairness* (invited), Proceedings of the 16th International Symposium on Mathematical Theory of Networks and Systems (MTNS 2004), Leuven, Belgium, July 2004

134. D. H. Choe and S. H. Low. *Global stability of Vegas-like TCP flow*, Proceedings of American Control Conference, Boston, MA, June/July 2004

135. J. Wang, A. Tang and S. H. Low. *Local stability of FAST TCP*, Proceedings of Conference on Information Sciences and Systems, Princeton, NJ, March 2004

136. C. Jin, D. X. Wei and S. H. Low. *FAST TCP: motivation, architecture, algorithms, performance*, Proceedings of IEEE Infocom, Hong Kong, March 2004

137. A. Tang, J. Wang and S. H. Low. *Is fair allocation always inefficient*, Proceedings of IEEE Infocom, Hong Kong, March 2004

138. M. Mehyar, D. Spanos and S. H. Low. *Optimization flow control with estimation noise*, Proceedings of IEEE Infocom, Hong Kong, March 2004

139. K.B. Kim, K. A. Tang and S. H. Low. *A stabilizing AQM based on virtual queue dynamics in supporting TCP with arbitrary delays*, Proceedings of IEEE Conference on Decision and Control, vol. ThM03-2, Maui, Hawaii, December 2003

140. K.B. Kim, K. A. Tang and S. H. Low. *Design of AQM in Supporting TCP Based on the Well-Known AIMD Model*, Proceedings of IEEE Globecom, San Francisco, CA, December 2003

141. C. Jin, D. X. Wei and S. H. Low. *The case for delay-based congestion control* **(invited)**, Proceedings of IEEE Computer Communication Workshop (CCW), Laguna Beach, CA, October 2003

142. A. Tang, J. Wang and S. H. Low. *Is fair allocation always inefficient* **(invited)**, Proceedings of 41st Annual Allerton Conference on Communication, Control, and Computing, Monticello, IL, October 2003

143. K.B. Kim and S. H. Low. *Design and analysis of AQM for stabilizing TCP*, Proceedings of American Control Conference, pp. 260-265, Denver, CO, June 2003

144. J. Wang, A. Tang and S. H. Low. *Maximum and Asymptotic Throughput under CHOKe*, Proceedings of ACM Sigmetrics, San Diego, CA, June 2003

145. D. H. Choe and S. H. Low. *Stabilized Vegas*, Proceedings of IEEE Infocom, San Francisco, April 2003

146. J. Wang, L. Li, S. H. Low and J. C. Doyle. *Can TCP and shortest path routing maximize utility*, Proceedings of IEEE Infocom, San Francisco, April 2003

147. A. Tang, J. Wang and S. H. Low. *Understanding CHOKe*, Proceedings of IEEE Infocom, San Francisco, April 2003

148. F. Paganini, Z. Wang, S. H. Low and J. C. Doyle. *A new TCP/AQM for stable operation in fast networks*, Proceedings of IEEE Infocom, San Francisco, April 2003

149. A. Tang, C. Florens, S. H. Low. *An emprirical study on the connectivity of ad hoc networks*, Proceedings of IEEE Aerospace Conference, Big Sky, MT, March 2003

150. Q. Yin and S. H. Low. *On stability of REM algorithm with uniform delay*, Proceedings of IEEE Globecom, Taipei, Taiwan, November 2002

151. D. H. Choe and S. H. Low. *Stabilized Vegas* **(invited)**, Proceedings of 40th Annual Allerton Conference on Communication, Control, and Computing, Monticello, IL, October 2002

152. K. Kim and S. H. Low. *Design of Receding Horizon AQM in stabilizing TCP with multiple links and heterogeneous delays* **(invited)**, Proceedings of the 4th Asian Control Conference, vol. WA-1, Singapore, September 2002

153. W.H. Wang, M. Palaniswami and S.H. Low. *Optimal flow control in multirate multicast networks*, Proceedings of the 4th Asian Control Conference, Singapore, 1596–1601, September, 2002

154. V. H. Li, Z.-Q. Liu, Z.-Q. He and S. H. Low. *Active queue management to improve TCP performance over wireless networks*, Proceedings of SPIE ITCom, Boston, MA, July-August 2002

155. C. Cameron, S. H. Low and D. Wei. *High density model for server allocation and placement*, ACM Sigmetrics, Marina del Rey, CA, June 2002

156. S. H. Low, F. Paganini, J. Wang, S. Adlakha and J. C. Doyle. *Dynamics of TCP/AQM and a Scalable Control*, Proceedings of the IEEE Infocom, New York, NY, June 2002

157. C. Cameron, S. H. Low and David X. Wei. *High-density Model of Content Distribution Network* **(invited)**, Proceedings of Information, Decision and Control Symposium (IDC 2002), Adelaide, Australia, February 11-13, 2002

158. S. Athuraliya and S. H. Low. *An empirical validation of a duality model of TCP and queue management algorithms* **(invited)**, Proceedings of Winter Simulation Conference, Arlington, VA, December 2001

159. S. H. Low, F. Paganini, J. Wang, S. Adlakha and J. C. Doyle. *Linear stability of TCP/RED and a Scalable Control* **(invited)**, Proceedings of 39th Annual Allerton Conference on Communication, Control, and Computing, Monticello, IL, October 2001

160. W. H. Wang, S. Palaniswami and S. H. Low. *Flow control in networks with multiple paths*, Proceedings of SPIE ITCom, Denvor, CO, August 2001

161. S. Athuraliya, V. H. Li, S. H. Low and Q. Yin. *REM: Active Queue Management*, Proceedings of the 17th International Teletraffic Congress, Salvador da Bahia, Brazil, September 24-28, 2001

162. S. H. Low, Larry Peterson and Limin Wang. *Understanding Vegas: A Duality Model*, ACM Sigmetrics, Boston, MA, June 2001

163. A. Elwalid, C. Jin, S. H. Low and I. Widjaja. *MATE: MPLS Adaptive Traffic Engineering*, Proceedings of IEEE Infocom, April 2001, Alaska, USA

164. S. H. Low and N. F. Maxemchuk. *Capacity of text marking channel* **(invited)**, Proceedings of the First IEEE Pacific-Rim Conference on Multimedia, December 13-15, 2000, University of Sydney, Australia

165. S. H. Low. *A duality theory of TCP flow controls*, Proceedings of at ITC Specialist Seminar on IP Traffic Measurement, Modeling and Management, September 18-20, 2000, Monterey, CA

166. S. H. Low. *Flow control through duality*, Eighth IFIP Workshop on Performance Modelling and Evaluation of ATM & IP Networks, July 17-19, 2000, Ilkley, West Yorkshire, U.K.

167. S. Athuraliya, S. H. Low and D. Lapsley. *Random Early Marking*, Proceedings of the First International Workshop on Quality of future Internet Services (QofIS'2000), 25- 26 September 2000, Berlin, Germany

168. S. Athuraliya and S. H. Low. *Simulation comparison of REM and RED*, Proceedings of ICON2000, Singapore, September 2000

169. S. H. Low. *Multipath optimization flow control*, Proceedings of ICON2000, Singapore, September 2000

170. S. Athuraliya and S. H. Low. *Price computation in REM*, Proceedings of IEEE ICC, New Orleans, US, June 2000

171. S. Athuraliya, D. Lapsley and S. H. Low. *An Enhanced Random Early Marking Algorithm for Internet Flow Control*, Proceedings of IEEE Infocom, Isreal, pp. 1425-34, March, 2000

172. S. Athuraliya and S. Low. *Optimization Flow Control with Newton-Like Algorithm*, Proceedings of IEEE Globecom, pp. 1264-1268, Brazil, Dec. 1999

173. D. Lapsley and S. H. Low. *Random Early Marking for Internet Congestion Control*, Proceedings of Globecom, pp. 1747-1752, Brazil, Dec, 1999

174. S. H. Low and D. Lapsley. *Convergence of Asynchronous Optimization Flow Control*, Proceedings of the IFIP TC6 Fifth International Conference on Broadband Communications, pp. 435-444, Hong Kong, Nov., 10-12, 1999

175. David Lapsley and Steven H. Low. *Random Early Marking: An Optimization Approach to Internet Congestion Control*, Proceedings of IEEE ICON, pp. 67-74, Brisbane, Australia, September, 1999

176. S. H. Low. *Optimization Flow Control with On-line Measurement*, Proceedings of the 16th International Teletraffic Congress, pp. 237–249, Edinburgh, U.K., June 1999

177. M. Kodialam and S. H. Low. *Resource Allocation in a Multicast Tree*, Proceedings of IEEE Infocom, pp. 262-266, New York, NY, March 1999

178. Yong Liu, Jonathon Mant, Edward Wong, Steven H. Low. *Marking and Detection of Text Documents using Transform-Domain Techniques*, Proceedings of IS&T/SPIE's 11th Annual Symposium on Electronic Imaging: Science and Technology, pp. 317-328, San Jose, CA, January 1999

179. Y. Ohk and S. H. Low. *Cooperative Reliable Multicast Protocol (CRMP) with Local Recovery*, Proceedings of the SPIE Conference on Performance and Control of Network Systems, pp. 334-345, Boston, MA, November 1998

180. D. Lapsley and S. H. Low. *An IP Implementation of Optimization Flow Control*, Proceedings of Globecom, pp. 3541-46, Sydney, Australia, November 1998

181. D. Lapsley and S. H. Low. *An Optimization Approach to ABR Control*, Proceedings of ICC, pp. 523-527, Atlanta, GA, June 1998

182. N. Duffield and S. H. Low. *The Cost of Quality in Networks of Aggregate Traffic*, Proceedings of IEEE Infocom, p. 525-532, San Francisco, March 1998

183. S. H. Low. *Equilibrium Allocation of Variable Resources for Elastic Traffics*, Proceedings of IEEE Infocom, p. 858-864, San Francisco, March 1998

184. S. H. Low. *Equilibrium Pricing and Allocation of Bandwidth and Buffers at an ATM Node*, The 3rd Asia-Pacific Conference on Communications (APCC'97), Sydney, December 1997

185. S. H. Low. *Renegotiation Strategies in Telecommunication Networks* **(invited)**, The 4th Conference of the Association of Asian-Pacific Operational Research Societies (APORS'97), Melbourne, Australia, November/December 1997

186. S. H. Low. *Resources Renegotiation in ATM Networks*, SPIE Conference on Performance and Control of Network Systems, Dallas, TX, November 1997

187. N. F. Maxemchuk and S. H. Low. *Marking Text Documents*, International Conference on Image Processing, Santa Barbara, CA, October 26-29, 1997

188. S. H. Low. *Equilibrium Bandwidth and Buffer Allocations*, Proceedings of International Conference on Telecommunications (ICT97), pp. 155-160, Melbourne, Australia, April 1997¡/i¿¡/li¿

189. S. H. Low and N. F. Maxemchuk. *An Algorithm to Compute Collusion Path in Cryptographic Protocols*, Proceedings of IEEE Infocom, Kobe, Japan, April 1997

190. S. H. Low and N. F. Maxemchuk. *Collusion Analysis of Cryptographic Protocols*, Proceedings of IEEE Globecom, pp. 1-5, London, U.K., November 1996

191. L. Tang and S. H. Low. *CHRG-HTTP: A Tool for Micropayments on the WWW*, The 6th USENIX UNIX Security Symposium, San Jose, CA, July 1996

192. S. H. Low and N. F. Maxemchuk. *Modeling Cryptographic Protocols & their Collusion Analysis*, Proceedings of First International Workshop on Information Hiding, Newton Institute, University of Cambridge, U.K., May/June 1996; Springer-Verlag Lecture Notes in Computer Science, Ross Anderson (Ed.), Vol. 1174, pp. 169-182

193. S. H. Low and B. Narendran. *Fault Identification Techniques in Communication Networks*, Proceedings of First Conference on Fault Tolerance Systems, I.I.T., Madras, December 1995

194. S. H. Low, A. M. Lapone and N. F. Maxemchuk. *Document Identification to Discourage Illicit Copying*, Proceedings of IEEE Globecom, Singapore, pp. 1203-1208, November 1995

195. S. H. Low, N. F. Maxemchuk, J. T. Brassil and L. O'Gorman. *Document Marking and Identification using Both Line and Word Shifting*, Proceedings of IEEE Infocom, pp. 853-860, April 1995

196. N. F. Maxemchuk and S. H. Low. *The Use of Communications Networks to Increase Personal Privacy*, Proceedings of IEEE Infocom, pp. 504-512, April 1995

197. J. T. Brassil, S. H. Low, N. F. Maxemchuk and L. O'Gorman. *Hiding Information in Document Images*, Proceedings of the 1995 Conference on Information Sciences and Systems, pp. 482-489, Johns Hopkins University, March 1995

198. S. H. Low, N. F. Maxemchuk and S. Paul. *Anonymous Credit Cards*, Proceedings of 2nd ACM Conference on Computer-Communications Security, pp. 108-117, Fairfax, Va. Nov. 2-4, 1994

199. J. T. Brassil, S. H. Low, N. F. Maxemchuk and L. O'Gorman. *Marking Text Features of Document Images to Deter Illicit Dissemination*, International Conference on Pattern Recognition, Israel, October 1994

200. J. T. Brassil, S. H. Low, N. F. Maxemchuk and L. O'Gorman. *Electronic Marking and Identification Techniques to Discourage Document Copying*, Proceedings of IEEE Infocom, pp.1278-1287, June 1994

201. S. H. Low and P. P. Varaiya. *An algorithm for Optimal Service Provisioning using Resource Pricing*, Proceedings of IEEE Infocom, pp. 368-373, June 1994

202. N. T. Plotkin, M. Wong, J. Yee and S. Low. *On the Usefulness of Explicit Congestion Notification in High Speed Networks*, 2nd International Conference on Telecommunications Systems, Modeling and Analysis, March 1994

203. S. H. Low. *A Probabilistic Approach to Testing Protocols with Unobservable Transitions*, Proceedings of International Conference on Network Protocols (ICNP), pp. 368-375, October 1993

204. S. H. Low and P. P. Varaiya. *Burstiness Bounds for some Burst Reducing Servers*, Proceedings of IEEE Infocom, pp. 2-9, March 1993

205. S. H. Low and P. P. Varaiya. *Stability of a Class of Dynamic Routing Protocols (IGRP)*, Proceedings of IEEE Infocom, pp. 610-616, March 1993

206. S. Low, N. T. Plotkin, M. Wong, J. Yee. *Performance Modeling of PVCs in Frame Relay Networks*, Wescon'92, San Francisco, November 1992

207. S. Low and K. M. Nichols. *SMDS Measurements and Modeling to Predict Application Performance*, Proceedings of IEEE Infocom, May 1992

208. S. H. Low and P. P. Varaiya. *A Simple Theory of Traffic and Resource Allocation in ATM*, Proceedings of IEEE Globecom, pp. 1633-37, December 1991

209. C. Brooks, A. Deshpande, S. Low and M. Wong. *SMDS Performance Analysis*, Wescon'91, San Francisco, November 1991

210. S. H. Low and P. P. Varaiya. *Bandwidth and Buffer Allocations in ATM*, Proceedings of 29th Annual Allerton Conference on Communication, Control and Computing, Monticello, Illinois, October 1991