# Florian Dörfler

Assistant Professor for Complex Systems Control
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## Academic Positions

July'14–current **Assistant Professor**, *Swiss Federal Institute of Technology (ETH) Zürich*, Switzerland
Department of Information Technology and Electrical Engineering

Sep'13–July'14 **Assistant Professor**, *University of California at Los Angeles*, United States
Department of Electrical Engineering

## Education

Sep'09–Sep'13 **Ph.D.** in Mechanical Engineering, *University of California at Santa Barbara*
Advisor: Francesco Bullo
Ph.D. thesis: *Dynamics and Control in Power Grids and Complex Oscillator Networks*

Oct'03–Dec'08 **Diploma** in Engineering Cybernetics, *University of Stuttgart*
Advisors: Frank Allgöwer (University of Stuttgart) and Bruce Francis (University of Toronto)
Diploma thesis: *Geometric Analysis of the Formation Problem for Autonomous Robots*
Student thesis: *Port-Hamiltonian Systems – Stability Analysis and Application in Process Control*

## Research Interests

My research interests are centered around distributed control in complex, cyber-physical, and networked systems with applications to energy systems. Topics of current interest are

1. Distributed control, optimization, and monitoring in cyber-physical systems
2. Plug-and-play control and optimization in smart grid applications
3. Synchronization and dynamic phenomena in complex networks

## Best Paper & Thesis Awards

2017 Basil Papadias Best Student Paper Award at IEEE PES PowerTech Conference
(as advisor)

2016 IEEE Circuits and Systems Guillemin-Cauer Best Paper Award
(awarded for best paper in IEEE Transactions on Circuits and Systems 2016)

2016 Top Five Finalist for Best Student Paper Award at American Control Conference
(as advisor)

2015 UC Santa Barbara Mechanical Engineering Department Best PhD Award
(in recognition of outstanding achievements during PhD studies)

2014 IFAC Automatica Best Paper Award
(awarded for best application paper 2012–2014)

2013 Top Five Finalist for Best Student Paper Award at European Control Conference
(as co-author and co-advisor)

2011 O. Hugo Schuck Best Paper Award awarded by American Automatic Control Council
(awarded for theoretical contributions at one of the two largest annual control conferences)

2010 Best Student Paper Award at American Control Conference
(awarded at one of the two largest annual control conferences)

## Further Honors and Awards

2011–2012 Peter J. Frenkel Foundation Fellowship
(one of two campus-wide awards per academic year)

2009–2013 Regent's Special International Fellowship
(the Regent's scholarships are the most prestigious UC scholarship awards)

2008 Diplom awarded with special distinction by the University of Stuttgart
(institutional award)

2008 Baden-Württemberg Stipendium Renewed
(national scholarship)

2007–2008 Baden-Württemberg Stipendium
(national scholarship)

2007–2008 Ontario Baden-Württemberg Program Fellow
(national scholarship)

## Research Experience

July'14–current **Assistant Professor**, *Swiss Federal Institute of Technology (ETH) Zürich*
at *Automatic Control Laboratory*

Sep'13–July'14 **Assistant Professor**, *University of California at Los Angeles*
at *Department of Electrical Engineering*

Mar'13–July'14 **Visiting Professor**, *California Institute of Technology*
at *Rigorous Systems Research Group* hosted by Steven Low and Adam Wierman

Apr'09–Sep'13 **Graduate Student Researcher** at University of California at Santa Barbara
at *Center for Control, Dynamical Systems, and Computation* advised by Francesco Bullo

May'11–Jul'11 & Jun'12–Aug'12 **Graduate Student Researcher** at Los Alamos National Laboratories
at *Center for Nonlinear Studies* advised by Michael Chertkov and Scott Backhaus

Aug'08–Dec'08 **Corporate Research Intern** at EADS Astrium, Friedrichshafen, Germany
at *Attitude and Orbit Control Group* advised by Jochen M. Rieber and Trond D. Krøvel

Aug'07–Aug'08 **Graduate Student Researcher** at University of Toronto
at *Systems Control Group* advised by Bruce Francis

May'07–Jul'07 **Student Research Assistant** at University of Stuttgart
at *Institute for Systems Theory and Automatic Control* advised by Jørgen K. Johnsen and Frank Allgöwer

## Educational Activities

### Lecturing

Swiss Federal Institute of Technology (ETH) Zürich

2015–current *Distributed Systems and Control*
*Control Systems I*

2014 University of California at Los Angeles
*Linear Systems: State-Space Approach*
*Distributed Systems and Control*

### Graduate Schools

2017 "Innovative controls for renewable source integration into smart energy systems" (INCITE) European Summer School, Barcelona, Spain

2016 DISC Winter Course on "Power Systems Control - from Circuits to Economics", Groningen, Netherlands

2015 Grid Science Winter School & Conference, Santa Fe, United States

2015 MSE Winter School Holistic Modelling and Control of Energy Systems, Ohlstadt, Germany

### Didactics

2016 Speaker at ETH LET teaching event "Increasing Interactivity"

## Advising

**PhD Students** at ETH Zürich

Mar'18–current Liviu Aolaritei

Sep'17–current Jeremy Coulson

Aug'17–current Ali Tayyebi-Khameneh
(externally supervised from Austrian Institute of Technology)

Dec'16–current Taouba Jouini

Jan'16–current Nicolò Pagan

Apr'15–current Adrian Hauswirth

Jan'15–current Catalin Arghir

July'14–current Bala Kameshwar Poolla

**PostDoc Advisees** at ETH Zürich

Jan'16–current Dominic Groß

Jan'15–current Saverio Bolognani

Aug'16–Jan'18 Marcello Colombino
now at National Renewable Energy Laboratory in Golden, CO, United States

Apr'16–Dec'16 Theodor Borsche
now at THEMA Consulting Group, Oslo, Norway

**Graduate Student Mentor** at ETH Zürich

May'18–current Marco Buob (supervised jointly with N. Pagan)
Tentative semester thesis title: "Simulations of Centrality Games in Social and Economic Networks"

Mar'18–current Sandeep Menta (supervised jointly with A. Hauswirth and S. Bolognani)
Tentative master thesis title: "Real-time control of power system: voltage and dynamic stability"

Feb'18–current Denis Oliver von Arx (supervised jointly with D. Groß)
Tentative master thesis title: "Grid-forming converter control in microgrids"

Feb'18–current Aidar Zhetessov (supervised jointly with C. Arghir)
Tentative semester thesis title: "Virtual-oscillator based control of inverters in power grids: Theory and Experiment"

Nov'17–current Irina Subotic (supervised jointly with D. Großand M. Colombino)
Tentative master thesis title: "Decentralized Synchronization of Inverter Based Grid"

Dec'17–Mar'18 Tomer Gidron (supervised jointly with N. Pagan)
Semester thesis: "Centrality Games in Social and Economic Networks"

Dec'17–Mar'18 Baudouin Vandenbussche (supervised jointly with B. K. Poolla and D. Groß)
Semester thesis: "Battery integration in a low-inertia power grid"

Dec'17–Mar'18 Chu Zhongda (supervised jointly with U. Markovic and T. Jouini)
Semester thesis: "Adaptive provision of virtual inertia on a transmission system level"

Dec'17–Mar'18 David Flores Rodriguez (supervised jointly with B.K. Poolla and S. Bolognani)
Semester thesis: "Time Domain Performance Metrics in Optimal Inertia Placement"

Sep'17–Mar'18 Corentin Rouault (externally supervised by L. G. Barbosa Rolim)
Master thesis: "Control, Synchronization and Design of an Islanded Microgrid"

Nov'17–Feb'18 Baiwei Guo (supervised jointly with C. Arghir)
Semester thesis: "Energy based angle consensus in power systems"

Nov'17–Jan'18 Sandro Renggli and Michel Schubiger (supervised jointly with B.K. Poolla, D.A. Tian, and G . Sansavini)
Semester thesis: "Impact of Inverter-Connected Generation Units on the Operation of Power Systems"

Nov'17–Jan'18 Felix Böwing (supervised jointly with A. Hauswirth and S. Bolognani)
Semester thesis: "Optimal nonlinear frequency control in power systems"

Jun'17– Dec'17 Liviu Aolaritei (externally supervised by K. Turitsyn)
Master thesis: "Robust stability assessment under operational constraints in power systems"

Sep'17–Nov'17 Irina Subotic (supervised jointly with A. Hauswirth)
Semester thesis: "On the Existence of Solutions to Time-varying Projected Dynamical Systems"

Mar'17–Jun'17 Chu Zhongda (supervised jointly with C. Arghir)
Semester thesis: "Virtual-oscillator-based Analysis and Control of Induction Machines in Power Systems"

Feb'17–Oct'17 Beat Stadler (supervised jointly with C. Arghir)
Master thesis: "Virtual-oscillator based control of inverters in microgrids - theory and experimental results"

Feb'17–June'17 Jean-Sébastian Brouillion (supervised jointly with M. Colombino)
Semester thesis: "Decentralized synchronization of an inverter based grid"

Jan'17–May'17 Josefine Quack (externally supervised by Muriel Richard-Noca)
Semester thesis: "Prototyping and Testing of Solar Panel Residual Dipole for Nanosatellites"

Nov'16–May'17 József Gàbor Pázmány (supervised jointly with A. Hauswirth and S. Bolognani)
Master thesis: "Robust Optimization of Nonlinear Power Systems in Realtime"

Aug'16–Feb'17 Sebastian Martin Curi (supervised jointly with D. Groß)
Master thesis title: "Control of Low Inertia Power Grids: A model reduction approach"

Oct'16–Jan'17 Elena Arcari (supervised jointly with S. Bolognani)
Semester thesis: "Fast chance-constrained optimization using real-time measurements with applications to power distribution systems"

July'16–Jan'17 Philipp Kurt Lütolf (supervised jointly with B.K. Poolla, T. Borsche, and S. Bolognani)
Master thesis: "Optimal Placement of Virtual Damping and Inertia"

July'16–Oct'16 Liviu Aolaritei (supervised jointly with S. Bolognani)
Semester thesis: "A decentralized Voltage Collapse Distance for Power Distribution Networks"

June'16–Oct 16 Alessandro Zanardi (supervised jointly with A. Hauswirth and S. Bolognani)
Semester thesis: "Constrained optimization over manifolds for power system application"

April'16–Nov'16 Pulkit Nahata (supervised jointly with S. Mastellone)
Master thesis: "Decentralized Coordinated Control of Photovoltaic Inverters in Residential Microgrids"

May'16–Nov'16 Alexandros Paris Ketsetzis (supervised jointly with A. Hauswirth, E. Kaffe, and A. Brenzikofer)
Master thesis: "Optimal PMU placement for State Estimation in Power Grids"

Dec'15–June'16 Yannick Meier (externally supervised by N. Li)
Master thesis: "Parallelized Interior Point Method for Security Constrained Optimal Power Flow (SCOPF) of Distribution Networks"

Dec'15–May'16 Taouba Jouini (supervised jointly with C. Arghir)
Master thesis: "Grid-Friendly Matching Control of Synchronous Machines by DC/AC converters in Bulk Power Networks"

Oct'15–Feb'16 Cyrill Frei (supervised jointly with M. Schmitt, P. Beuchat, and C. Ramesh)
Semester thesis: "Gaussian Processes in Reinforcement Learning"

Oct'15–Feb'16 Jan Schulze (supervised jointly with S. Bolognani)
Semester thesis: "Peer to peer clock synchronization in wireless sensor networks"

Oct'15–Jan'16 Panagiotis Kyriakis (supervised jointly with S. Bolognani)
Semester thesis: "Formation of robust networks for secure exchange of cryptocurrencies"

Oct'15–Jan'16 Matthias Fetzner (supervised jointly with A. Hauswirth and S. Merkli)
Semester thesis: "Network Reduction applied to Optimal Power Flow Problems"

May'15–Oct'15 Felix Kottman (supervised jointly with S. Bolognani)
Master thesis: "Computational Load and Congestion Control in Cloud Environments"

Jun'15–Aug'15 Dalibor Drzajic (supervised jointly with S. Bolognani)
Semester thesis: "Energy Theft Detection using Compressive Sensing Methods"

Mar'15–Jun'15 Lelouvier Aaron (supervised jointly with S. Grammatico)
Semester thesis: "Decentralized and Distributed Frequency Regulation in Power Grids"

Apr'15–May'15 Yannick Meier (externally supervised by M. van der Schaar)
Semester thesis: "Predicting Grades"

Oct'14–Apr'15 Nahata Pulkit (supervised jointly with B.K. Poolla)
Semester thesis: "Distributed Control and Optimization in DC Microgrids"

**Long-term Visiting Graduate Students and PostDoc Advisees**

2017 Enric Sánchez Sánchez, Robin Delabays

2016 Xiaofan Wu, Wei Chen

2015 Spyros Chatzivasileiadis, Nima Monshizadeh, John W. Simpson-Porco, Marco Todescato, Diego Romeres

**Graduate Student Mentor** at University of California Los Angeles

Nov'13–July'14 Jinxin Zhao
Project title: "Distributed Control and Optimization in DC microgrids"

**Graduate Student Mentor** at University of California Santa Barbara

Sep'11–Sep'13 John W. Simpson-Porco
Tentative Ph.D. thesis title: "Microgrids and Droop-Controlled Inverters"

Feb'13–July'13 Basilio Gentile
Laurea thesis: "Approximate Solution to the Reactive Power Flow and its Application to Voltage Stability in Microgrids"

Sep'12–Mar'13 Hedi Bouattour
Diploma thesis: "Distributed Secondary Control in Microgrids"

Jan'12–Jul'12 Diego Romeres
Laurea thesis: "Novel Results on Slow Coherency in Power Networks"

## Research Awards

2018 Swiss Federal Office of Energy (SFOE) Research Program Grids: *a UNIfied COntrol framework for Real-time power system operation* (note: led by Saverio Bolognani)

2018 Swiss Federal Office of Energy (SFOE) Research Program Grids: *Grid-forming control of renewable generation and power electronics* (note: led by Dominic Groß)

2018 SATW Scientific Conference Funding: *International Workshop on "Vistas in Control"*

2017 ETH Zürich and ABB Schweiz AG Contract #12376: *Decentralized Control of Power Converters*

2016 European Commission H2020 #691800: *Massive InteGRATion of power Electronic devices — MIGRATE*

2016 SNF Scientific Conference Funding: *International Workshop on "Future Electric Power Systems"*

2015 ETH Seed Project SP-ESC 2015-07(4): *Novel control approaches for low-inertia power grids*

2015 SNF Assistant Professor Energy Grant #PYAPP2_160573: *Plug-and-Play Control & Optimization in Microgrids*

2014 NSF EPCN Medium #1406891: *Virtual Oscillator Control for Microgrids*
(returned and declined when moving from UCLA to ETH Zürich)

2011 NSF CPS Medium:#1219917: *The Cyber-Physical Challenges of Transient Stability and Security in Power Grids* (contributed as consultant)

## Professional Service

### Technical Reviewer

Journals *Control systems:* IEEE Transactions on Automatic Control ○ IEEE Transactions on Control of Network Systems ○ IEEE Transactions on Control Systems Technology ○ Automatica ○ SIAM Journal on Control and Optimization ○ Systems and Control Letters ○ European Journal of Control ○ IEEE Transactions on Circuits and Systems Part II ○ Journal of Process Control ○ IEEE Control Systems Magazine ○ IEEE Control Systems Letters ○ ACM Transactions on Cyber-Physical Systems

*Power systems & energy:* IEEE Transactions on Power Systems ○ IEEE Transactions on Energy Conversion ○ IEEE Transactions on Power Delivery ○ IEEE PES Letters ○ International Transactions on Electrical Energy Systems ○ International Journal of Electrical Power and Energy Systems ○ Sustainable Energy, Grids and Networks ○ Energies

*Dynamical systems:* Physica D ○ SIAM Journal on Applied Dynamical Systems ○ Chaos: An Interdisciplinary Journal of Nonlinear Science ○ Nonlinearity ○ Nonlinear Analysis: Hybrid Systems ○ Communications in Mathematical Sciences ○ Journal of Statistical Physics ○ Journal of Mathematical Physics ○ Applied Mathematical Modeling ○ New Journal of Physics ○ Journal of Statistical Physics

*Computer science & discrete mathematics:* IEEE Transactions on Network Science and Engineering ○ SIAM Journal on Applied Mathematics ○ Discrete Applied Mathematics ○ Journal of Complexity

*Miscellaneous journals:* Proceedings of the National Academy of Sciences ○ Nature Communications ○ Nature Scientific Reports ○ Proceedings of the IEEE ○ PLOS ONE ○ Neurocomputing ○ Robotics and Autonomous Systems ○ IEEE Transactions on Industrial Informatics

Conferences American Control Conference ○ IEEE Conference on Decision and Control ○ European Control Conference ○ Multi-conference on Systems and Control ○ IFAC World Congress ○ IFAC Workshop on Distributed Estimation and Control in Networked Systems ○ IFAC Conference on Modeling, Identification and Control of Nonlinear Systems ○ IFAC Conference on Analysis and Control of Chaotic Systems ○ IFAC Symposium on Nonlinear Control Systems ○ Mediter-

ranean Conference on Control and Automation ○ International Symposium on Mathematical Theory of Networks and Systems ○ Power Systems Computation Conference ○ Indian Control Conference ○ Africon ○ IEEE Global Conference on Signal and Information Processing

Books — Springer ○ Birkhäuser ○ CRC Press, Taylor & Francis Group ○ Elsevier ○ Institution of Engineering & Technology

### Editorial Service

2018 — Associate Editor for Automatica

2016 — Guest editor for IEEE Transactions on Smart Grid special issue "Distributed Control and Efficient Optimization Methods for Smart Grid"

### Technical Program Committees

2019 — IEEE International Conference on Smart Grid Synchronized Measurements and Analytics (SGSMA)

2018 — IEEE Global Conference on Signal and Information Processing (GlobalSIP)

2018 — IEEE International Conference on Smart Grid Communications (SmartGridComm)

2018 — IFAC Workshop on Distributed Estimation and Control in Networked Systems (NecSys)

2018 — International School and Conference on Network Science (NetSci)

2017 — "Data Mining for Cyber-physical and Industrial Systems" Workshop at IEEE ICDM

2017 — IEEE International Conference on Smart Grid Communications (SmartGridComm)

2017 — Greenmetrics (Sigmetrics) Workshop

2016 — Workshop on Complex Networks

2015 — IEEE Workshop on Control and Modeling for Power Electronics (COMPEL)

2014 — IEEE International Conference on Smart Grid Communications (SmartGridComm)

### Review Panels and Funding Committees

2017 — Deutsche Bundesstiftung Umwelt (Promotionsstipendienprogramm)

2017 — Chilean National Science and Technology Commission, FONDECYT

2017 — German Research Foundation (DFG), Priority Program "Hybrid and multimodal energy systems: System theoretical methods for the transformation and operation of complex networks"

2017 — Swiss National Science Foundation (SNSF) Ambizione Energy

2016 — Swiss National Science Foundation (SNSF)

2016 — Dutch-Indian Data Driven Science, Netherlands Organisation for Scientific Research (NWO)

2015 — Energy System Integration - Planning, Operations and Societal Embedding, Netherlands Organisation for Scientific Research (NWO)

2015 — Cyber Physical systems with Model Driven Architectures and resilience (CyPhyMedusa), French National Research Agency (ANR) and CHIST-ERA ERA-NET

2015 — European PhD Award on Control for Complex and Heterogeneous Systems

2014 — Scientific Independence of Young Researchers (SIR) 2014, Italian Ministry for Education University and Research (MIUR)

### Organizer/Co-Organizer

2019 Conference on *Future Electric Power Systems and the Energy Transition*, Champéry, Switzerland

2018 Vistas in Control: ETH Control Workshop

2018 EECI International Graduate School on Control, ETH Zürich

2017 Two Invited Sessions on *Control of Low-Inertia Power Systems* at IEEE Conference on Decision and Control, Melbourne, Australia

2017 Invited Session on *Advances on Optimal Power Flow–Robust and Stochastic Approaches* at IEEE Conference on Decision and Control, Melbourne, Australia

2017 Conference on *Future Electric Power Systems and the Energy Transition*, Champéry, Switzerland

2016 Workshop on *Optimization and Control for Tomorrow's Power Systems* at European Control Conference, Aalborg, Denmark

2016 Invited Session on *Distributed Control & Optimization in Next-Generation Power Networks* at European Control Conference, Aalborg, Denmark

2016 EECI International Graduate School on Control, ETH Zürich

2015 Invited Session on *Distributed Control & Optimization in Next-Generation Power Networks* at American Control Conference, Chicago, IL

2015 MSE Winter School Holistic Modelling and Control of Energy Systems, Ohlstadt, Germany.

2015 Invited Session on *Emerging strategies for stability analysis of electrical power grids* at SIAM Conference on Dynamical Systems, Snowbird, UT.

2014 Invited Session on *Control and Dynamics in Power Networks* at International Symposium on Mathematical Theory of Networks and Systems, Groningen, the Netherlands.

2011 Santa Barbara Control Workshop 2011

### Chair/Co-Chair

Conf. Sessions IEEE Conference on Decision and Control ○ European Control Conference ○ American Control Conference ○ Southern California Nonlinear Control Workshop ○ International Symposium on Mathematical Theory of Networks and Systems ○ IFAC World Congress

### Workshops and Tutorials

2017 *Melbourne Workshop on Future Power Systems* Melbourne, Australia, December 2017.

2016 Workshop on *Smart Grid Control* at American Control Conference, Boston, MA, USA, July 2016.

2016 Workshop on *Distributed and Stochastic Optimization: Theory and Applications* at European Control Conference, Aalborg, Denmark, June 2016.

2016 Workshop on *Optimization and Control for Tomorrow's Power Systems* at European Control Conference, Aalborg, Denmark, June 2016.

2014 Workshop on *Open Problems in Multi-Agent Systems* at American Control Conference, Portland, OR, USA, June 2014.

2012 Tutorial on *Synchronization in Coupled Oscillators: Theory and Applications* at IEEE Conference on Decision and Control, Maui, HI, USA, December 2012.

2011 Workshop on *Control Systems Security: Challenges and Directions* at IEEE Conference on Decision and Control and European Control Conference, Orlando, FL, USA, December 2011.

## Professional Affiliations

2016–current *Global Network of Synchrophasor Solutions* Steering Committee/Consortium

2009–current Member, Institute for Electrical and Electronics Engineers (IEEE)
IEEE Societies: Control Systems Society (CSS) ○ Power and Energy Society (PES)

2009–current Member, Society for Industrial and Applied Mathematics (SIAM)

## Talks, Seminars, and Presentations

### Invited Talks

May'18 Institute for Automation and Applied Informatics, Karlsruhe Institute of Technology, Germany

Mar'18 Simons Institute, UC Berkeley, United States

Mar'18 CCDC Seminar, UC Santa Barbara, United States

Jan'18 Le laboratoire GIPSA-lab, Grenoble, France

Jan'18 "Power Systems: Semi-Algebraic Techniques for Optimal Power Flow and Stability Assessment", Versailles, France

Jun'17 AIT Seminar, Vienna, Austria

Jun'17 CoNDyNet Workshop "Dynamics in Power Systems – From Science to Industry", Potsdam

May'17 Institute for Theoretical Studies "Collective dynamics, control and imaging", ETH Zürich

Mar'17 Ruhr Universität Bochum, Control Seminar, Bochum, Germany

Mar'17 Optimization and Inference for Physical Flows on Networks, BIRS, Alberta

Feb'17 Future Electric Power Systems and the Energy Transition, Champéry, Switzerland

Dec'16 Energy Seminar, UC Berkeley

Oct'16 Computer Science Departmental Talk, Swiss Federal Institute of Technology (ETH) Zürich

Jul'16 National Renewable Energy Laboratory, Golden, CO

Jun'16 Keynote at Greenmetrics (Sigmetrics) Conference, Nice

May'16 Automatic Control Seminar, KTH Royal Institute of Technology, Sweden

May'16 Institute for Mathematics and its Applications, University of Minnesota

Apr'16 Seminaire d'Automatique du Plateau de Saclay, Laboratoire de Signaux et Systémes du Supelec

Nov'15 Laboratoire d'Automatique Seminar, École Polytechnique Fédérale de Lausanne (EPFL)

Oct'15 KAUST Workshop on Human-Machine Networks and Intelligent Infrastructure, KAUST

Jun'15 Advanced Methods for Energy Systems, Skolkovo Institute for Science and Technology, Moscow

Apr'15 Control Systems Seminar, Technical University Berlin

Feb'15 Systems and Control Seminar, Universiteé Catholique de Louvain

Jan'15 Swiss Federal Laboratories for Materials Science and Technology (EMPA)

Jan'15 Grid Science Winter School *&* Conference, Santa Fe, NM

Nov'14 Department of Engineering, University of Cambridge

Nov'14 Oxford Control Group, University of Oxford

Nov'14 Swissgrid Seminar, Laufenburg

Nov'14 Department of Information Engineering, University of Padova

Oct'14 Dagstuhl Seminar Modeling, Verification, *&* Control of Complex Systems for Energy Networks

Oct'14 ABB Corporate Research Center Seminar, Baden

Oct'14 Introductory Lecture, Swiss Federal Institute of Technology (ETH) Zürich

Oct'14 Dynamics and Control in Networks Workshop, Lund University

Sep'14 MnDRIVE Seminar Series, University of Minnesota

Jun'14 Rand Corporation Speaker Series, Los Angeles, CA

Jun'14 CPS Seminar, Department of Electrical Engineering, UC Los Angeles

May'14 Department of Electrical and Computer Engineering, UC San Diego

May'14 Department of Civil and Environmental Science, Stanford University

Mar'14 RASEI/ECEE Seminar, University of Colorado Boulder

Mar'14 National Renewable Energy Laboratory, Golden, CO

Feb'14 Rigorous Systems Research Group Seminar, California Institute of Technology

Nov'13 Ming Hsieh Department of Electrical Engineering, University of Southern California

Jul'13 Center for Nonlinear Studies, Los Alamos National Laboratories

Jun'13 Hybrid Control Systems Workshop, Technical University Munich

Jun'13 Symposium on Complex Systems Control, Swiss Federal Institute of Technology (ETH) Zürich

Mar'13 Department of Electrical Engineering, UC Los Angeles

Mar'13 School of Electrical and Computer Engineering, Georgia Institute of Technology

Feb'13 Center for Nonlinear Studies, Los Alamos National Laboratories

Oct'12 Automatic Control Laboratory, Swiss Federal Institute of Technology (ETH) Zürich

Jul'12 Institute for Systems Theory and Automatic Control, University of Stuttgart

Jul'12 Siemens Colloquium, Siemens AG, Munich

Jun'12 Center for Nonlinear Studies, Los Alamos National Laboratories

May'12 Optimization and Control for Smart Grids, Santa Fe, NM

Apr'12 Department of Mathematics, UI Urbana-Champaign

Mar'12 Center for Nonlinear Studies, Los Alamos National Laboratories

Feb'12 Department of Electrical Engineering, UC Los Angeles

Oct'11 Institute for Energy Efficiency, UC Santa Barbara

Jun'11 Center for Nonlinear Studies, Los Alamos National Laboratories

Sep'10 Systems Control Group, University of Toronto

Aug'10 Institute of Automatic Control Engineering, Technical University Munich

Jun'10 Center for Control, Dynamical Systems and Computation, UC Santa Barbara

May'10 Control and Dynamical Systems, California Institute of Technology

Sep'08 Institute for Systems Theory and Automatic Control, University of Stuttgart

Aug'08 Systems Control Group, University of Toronto

### Contributed Talks at Conferences, Colloquia, etc.

Dec'17 IEEE Conference on Decision and Control, Melbourne, Australia

Jul'17 IFAC World Congress, Toulouse, France

Dec'16 IEEE Conference on Decision and Control, Las Vegas, United States

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| Jul'16 | American Control Conference, Boston, MA |
| Dec'15 | IEEE Conference on Decision and Control, Osaka, Japan |
| Sep'15 | Allerton Conference, UI Urbana-Champaign, IL |
| Jun'15 | NetSci 2015, Zaragoza, Spain |
| May'15 | Social Norms and Institutions, Monte Veritá, CH |
| Sep'14 | Allerton Conference, UI Urbana-Champaign, IL |
| Jul'14 | Int. Symposium on Mathematical Theory of Networks and Systems, Groningen, Netherlands |
| Jun'14 | European Control Conference, Strasbourg, France |
| Feb'14 | Information Theory and Applications Workshop, San Diego, CA |
| Dec'13 | IEEE Conference on Decision and Control, Florence, Italy |
| Jul'13 | IEEE Power & Energy Society General Meeting |
| Jul'13 | SIAM Conference on Control and its Applications |
| Dec'12 | IEEE Conference on Decision and Control, Maui, HI |
| Dec'11 | IEEE Conference on Decision and Control, Orlando, FL |
| Sep'11 | Allerton Conference, UI Urbana-Champaign, IL |
| Jun'11 | American Control Conference, San Francisco, CA |
| Oct'10 | IEEE SmartGridComm Conference, Gaithersburg, MD |
| Sep'10 | IFAC NecSys Workshop, Annecy, France |
| Jun'10 | American Control Conference, Baltimore, MD |
| Aug'09 | European Control Conference, Budapest, Hungary |
| Jun'08 | American Control Conference, Seattle, WA |

## Journal Publications

[J1] F. Dörfler, J. W. Simpson-Porco, and F. Bullo. Electrical networks and algebraic graph theory: Models, properties, and applications. *Proceedings of the IEEE*, 106(5):977 – 1005, May 2018.

[J2] J. W. Simpson-Porco, B. K. Poolla, N. Monshizadeh, and F. Dörfler. Input-Output Performance of Linear-Quadratic Saddle-Point Algorithms with Application to Distributed Resource Allocation Problems. *IEEE Transactions on Automatic Control*, March 2018. Submitted. Available at https://arxiv.org/abs/1803.02182.

[J3] C. De Persis, E.R.A. Weitenberg, and F. Dörfler. A power consensus algorithm for DC microgrids. *Automatica*, 89:364–375, February 2018.

[J4] D. Groß, C. Arghir, and F. Dörfler. On the steady-state behavior of a nonlinear power system model. *Automatica*, 90:248–254, 2018.

[J5] D. Groß, M Colombino, J.S. Brouillon, and F. Dörfler. The effect of transmission-line dynamics on grid-forming dispatchable virtual oscillator control. *IEEE Transactions on Control of Network Systems*, 2018. Submitted. Available at https://arxiv.org/abs/1802.08881.

[J6] A. Hauswirth, S. Bolognani, G Hug, and F. Dörfler. Generic existence of unique lagrange multipliers in ac optimal power flow. *IEEE Control Systems Letters*, 2018. Submitted.

[J7] B. K. Poolla, S. Bolognani, N. Li, and F. Dörfler. A market mechanism for virtual inertia. *IEEE Transactions on Control of Network Systems*, 2018. Submitted. Available at https://arxiv.org/abs/1711.04874.

[J8] B. K. Poolla, S. Bolognani, and F. Dörfler. Optimal placement of virtual inertia in power grids. *IEEE Transactions on Automatic Control*, 62(12):6209–6220, December 2017.

[J9] E.R.A. Weitenberg, Y. Jiang, C. Zhao, E. Mallada, C. De Persis, and F. Dörfler. Robust decentralized secondary frequency control in power systems: Merits and trade-offs. *IEEE Transactions on Automatic Control*, November 2017. Submitted. Available at https://arxiv.org/abs/1711.07332.

[J10] L. Aolaritei, S. Bolognani, and F. Dörfler. Hierarchical and distributed monitoring of voltage stability in distribution networks. *IEEE Transactions on Power Systems*, October 2017. Submitted. Available at https://arxiv.org/abs/1710.10544.

[J11] C. Arghir, T Jouini, and F. Dörfler. Grid-forming control for power converters based on matching of synchronous machines. *Automatica*, 2017. To appear. Available at https://arxiv.org/pdf/1706.09495.pdf.

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