

Florian Dörfler

Associate Professor for Complex Systems Control

Swiss Federal Institute of Technology (ETH) Zürich

Automatic Control Laboratory

Department of Information Technology and Electrical Engineering (D-ITET)

Physikstrasse 3, ETL I 26

Zürich 8092, Switzerland

Phone: +41 44 632 72 88

Email: dorfler@ethz.ch

www links: [homepage](#), [ORCID](#), [Google Scholar](#)

Academic Curriculum Vitae

Research Interests

My interests are centered around automatic control, system theory, and optimization. My particular foci are on network systems, data-driven settings, and applications to power systems. My group has pioneered many theory methods that also found their way into industrial applications in the energy domain, such as online feedback optimization, data-enabled predictive control, or synchronization in oscillator networks.

Academic Positions

- Aug'19–current Associate Professor, *ETH Zürich*, Switzerland
Department of Information Technology and Electrical Engineering
- July'14–July'19 Assistant Professor, *ETH Zürich*, Switzerland
Department of Information Technology and Electrical Engineering
- Sep'13–July'14 Assistant Professor, *University of California at Los Angeles (UCLA)*, United States
Electrical & Computer Engineering Department

Academic Degrees

- Sep'09–Sep'13 Ph.D. in Mechanical Engineering, *University of California at Santa Barbara*
Advisor: Francesco Bullo
- Oct'03–Dec'08 Diploma in Engineering Cybernetics, *University of Stuttgart*
Advisors: Frank Allgöwer (University of Stuttgart) and Bruce Francis (University of Toronto)

Notable Academic Leadership

- Jan'21–Jan'22 Deputy Head of the *Department of Information Technology and Electrical Engineering, ETH Zürich*
- 2021–current Council Member of the *European Control Association*
- 2022–current *ETH Zürich* Didactic Fellow

Visiting Research Positions

- Mar'20–Jul'20 Visiting Professor, *KTH Stockholm* at the *Division of Decision and Control Systems*
- Mar'13–July'14 Visiting Professor, *California Institute of Technology* at the *Rigorous Systems Research Group*
- Summers '11,'12 Graduate Student Researcher at *Los Alamos National Laboratories* at the *Center for Nonlinear Studies*
- Aug'07–Aug'08 Graduate Student Researcher at *University of Toronto* at the *Systems Control Group*

Awards & Recognitions

Career Awards

- 2020 EUCA European Control Award
(distinguished European researcher under the age of 40 in systems and control)
- 2020 IFAC Manfred Thoma Medal
(distinguished researcher and/or engineer under the age of 40 in systems and control)

Best Paper Awards received by myself or by my students

- 2022 IEEE Transactions on Power Electronics Prize Paper Award
- 2022 IEEE CSS Swiss Chapter Young Author Best Journal Paper Award
- 2021 Best Paper Award at IEEE International Conference on Intelligent Transportation Systems
- 2020 Best Student & Outstanding Student Paper Award at IEEE Conference on Decision and Control
- 2020 Best Paper Award at IEEE PES General Meeting
- 2019 Best Student Paper Award at European Control Conference
- 2017 Basil Papadias Best Student Paper Award at IEEE PES PowerTech Conference
- 2016 IEEE Circuits and Systems Guillemin-Cauer Best Paper Award
- 2016 Top Five Finalist for Best Student Paper Award at American Control Conference
- 2014 IFAC Automatica Paper Prize
- 2013 Top Five Finalist for Best Student Paper Award at European Control Conference
- 2011 O. Hugo Schuck Best Paper Award awarded by American Automatic Control Council
- 2010 Best Student Paper Award at American Control Conference

Industrial Awards

- 2024 Watt d'Or Award in collaboration with AEW Energie AG

Thesis Recognitions received by myself or by my students

- 2017–current 7 × Silver Medal of ETH Zürich for Adrian Hauswirth, Ezzat Elokda, Verena Häberle, Nicolas Lanzetti, Panagiotis Grontas, Sebastian Curi, and Yannick Meier
- 2017, '20 2 × Willi-Studer Preis for Nicolas Lanzetti and Yannick Meier
- 2023 ITET Best Bachelor Thesis Award for Jan Brändle
- 2020 Schweizer Gesellschaft für Automatik (SGA) best master thesis award for Verena Häberle
- 2019 ABB Research Award for Liviu Aolaritei
- 2015 UC Santa Barbara Mechanical Engineering Department Best PhD Award
- 2008 Diplom awarded with special distinction by the University of Stuttgart

Research Awards

Total amount of competitive personal third-party funding acquired thus far: 6,719,443.43 CHF

- 2022 European Commission HORIZON-CL5-2022-D3-01-11: *Advanced Grid Interface for Innovative Storage Integration (AGISTIN)*
- 2022 NCCR Automation Industry Call: *Data-driven power system equivalent for modern power systems applications*

- 2022 ETH Zürich and Huawei Technologies Co., Ltd. Contract #20176: *Inertia-Stiffness Control Technology for Smart Grid Forming Photovoltaic Power Plants*
- 2022 SNF/FW Weave Project 200021E_20397: *From model-based to data-driven design: Signal processing and control of noisy nonlinear systems*
- 2020 SNF NCCR Automation (51NF40_180545)
- 2020 European Commission H2020 #883985: *Powering System flexibility in the future through RES (POSYTYF)*
- 2019 KAUST Office of Sponsored Research, OSR-2019-CoE-NEOM-4178.11: *GRIDX: The Autonomous Digital Grid*
- 2019 SNF Assistant Professor Energy Grant #PYAPP2_160573/2: mobility funds
- 2019 SNF Scientific Exchanges IZSEZo_185442: *International Workshop on Future Electric Power Systems*
- 2019 Swiss Federal Office of Energy (SFOE) Research Program Pilot-, Demonstrations- und Leuchtturmprojekte: *Renewable Management and Real-Time Control Platform (ReMaP) (SI/501810-01)*
- 2018 SNF Scientific Exchanges IZSEZo_183110: *Workshop on Vistas in Control*
- 2018 Swiss Federal Office of Energy (SFOE) Research Program Grids SI/501708: *a Unified control framework for real-time power system operation (UNICORN)* (note: led by Saverio Bolognani)
- 2018 Swiss Federal Office of Energy (SFOE) Research Program Grids SI/501707: *Grid-forming control of renewable generation and power electronics (GREAT)* (note: led by Dominic Groß)
- 2018 SATW Scientific Conference Funding F-2018-010: *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 20CO21_171241/1: *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* (declined when leaving UCLA)

Teaching Activities

Lecturing

ETH Zürich, Switzerland

- 2015–current *Control Systems*
- 2015–2019 *ETH Control Seminar Series*
- 2019 *Signals and Systems II*
- 2015–2018 & 2021–current *Distributed Systems and Control*

Ashesi University, Ghana

- 2023 *Control Systems*

University of California at Los Angeles, United States

- 2014 *Linear Systems: State-Space Approach*
- 2014 *Distributed Systems and Control*

Graduate Schools

- 2023 DTU PES Summer School on *Future Energy Systems: Advances in OR and AI*, Technical University of Denmark (DTU), Copenhagen, Denmark
- 2022

	EECI Graduate School on <i>Control and Optimization of Autonomous Power Systems</i> , Royal Institute of Technology (KTH), Stockholm, Sweden
2021	<i>Optimization and Control of Infrastructure Networks</i> Summer School (virtual)
2020	EECI Graduate School on <i>Control and Optimization of Autonomous Power Systems</i> , Royal Institute of Technology (KTH), Stockholm, Sweden
2019	Autumn School <i>Hybrid and multimodal energy systems</i> , Karlsruher Institut für Technologie (KIT), Karlsruhe, Germany
2017	<i>Innovative controls for renewable source integration into smart energy systems</i> (INCITE) European Summer School, Universitat Politècnica de Catalunya (UPC), Barcelona, Spain
2016	DISC Winter Course on <i>Power Systems Control - from Circuits to Economics</i> , University of Groningen, Groningen, Netherlands
2015	<i>Grid Science Winter School & Conference</i> , Santa Fe, United States
2015	MSE Winter School <i>Holistic Modeling and Control of Energy Systems</i> , Ohlstadt, Germany

Mentoring

Doctoral Students

Oct'22-current	Andras Sasfi	(co-advised with Ivan Markovsky)
Jul'22-current	Zhiyu He	(co-advised with Michael Mühlebach)
Apr'22-current	Eder Baron	(externally supervised from Austrian Institute of Technology)
May'21-current	Sophie Hall	(co-advised with Giuseppe Belgioioso and Dominic Liao-McPherson)
Nov'20-current	Lenart Treven	(co-advised with Andreas Krause)
Nov'20-current	Andrea Martin	(co-advised with Giancarlo Ferrari Trecate and John Lygeros)
Nov'20-current	Jean-Sébastien Brouillon	(co-advised with Giancarlo Ferrari Trecate)
Oct'20-current	Ezzat Elokda	(co-advised with Saverio Bolognani, Andrea Censi, and Emilio Frazzoli)
Oct'20-current	Alessandro Zanardi	(co-advised with Saverio Bolognani, Andrea Censi, and Emilio Frazzoli)
Oct'20-current	Michael Schneeberger	(co-advised with Silvia Mastellone)
Jun'20-current	Verena Häberle	(co-advised with Eduardo Prieto)
Oct'19-current	Nicolas Lanzetti	(co-advised with Saverio Bolognani)
Jan'19-current	Irina Subotic	(co-advised with Dominic Groß)
Mar'18-current	Liviu Aolaritei	(co-advised with Saverio Bolognani)

Postdoctoral Researchers

Sep'23-current	Carmen Amo Alonso	(co-advised with Melanie Zeilinger and Ryan Cotterell)
Aug'23-current	Jaap Eising	
Jun'23-current	Sarah Li	(co-advised with John Lygeros)
Mar'23-current	Mattia Bianchi	
Nov'22-current	Giulia De Pasquale	
Oct'22-current	Keith Moffat	
Nov'21-current	Xiuqiang He	
Sep'20-current	Linbin Huang	

Senior Scientists

Jan'16-current	Saverio Bolognani
----------------	-------------------

Sep'20–current Giuseppe Belgioioso
 Oct'20–current Alberto Padoan (co-advised with John Lygeros)

Alumni

Aug'17–Oct'23 Ali Tayyebi-Khameneh (now research scientist at Hitachi Energy)
 Oct'18–Jul'23 Lukas Ortmann (now Professor at Eastern Switzerland University of Applied Sciences)
 Oct'22–Dec'22 Ivan Markovsky (now Research Professor at ICREA, Barcelona, Spain)
 Sep'17–Nov'22 Jeremy Coulson (now Assistant Professor at University of Wisconsin Madison)
 Feb'19–Jul'22 Miguel Picallo Cruz (now senior consultant at Palantir Technologies)
 Feb'20–Feb'22 Michael Fisher (now Assistant Professor at University of Waterloo)
 Oct'21–Dec'21 Henk van Waarde (now Assistant Professor at University of Groningen)
 Oct'20–Aug'21 Soroosh Shafieezadeh Abadeh (now Assistant Professor at Cornell University)
 Jun'18–Jun'21 Wenjun Mei (now Assistant Professor at Peking University)
 Jan'16–Apr'21 Nicolò Pagan (now postdoc at Universität Zürich & ETH Zürich)
 Apr'15–Jan'19 Adrian Hauswirth (now senior data & optimization scientist at BKW Energie)
 Aug'18–Jul'20 Robin Delabays (now Assistant Professor at HES-SO Valais-Wallis)
 Jan'15–Dec'19 Catalin Arghir (now Engineer at Beyond Gravity)
 Jan'16–Dec'19 Dominic Groß (now Assistant Professor at University of Wisconsin Madison)
 Aug'16–Jan'18 Marcello Colombino (now Assistant Professor at McGill University, Montreal)
 Apr'16–Dec'16 Theodor Borsche (now at Boston Consulting Group, Oslo)
 July'14–July'19 Bala Kameshwar Poolla (now Research Engineer at National Renewable Energy Laboratory)
 Jan'15–Jan'16 Saverio Bolognani (now Senior Scientist at ETH Zürich)

Long-Term Visiting Scientists in my Team

2023 Emiland Garrabe, Cheng Feng, Feiran Zhao, Jianli Gao, Alessandro Chiuso, Ivan Markovsky, Yifei Guo, Liam Hamed Taghavian, Chris Verhoek
 2022 Eduardo Prieto, Julian Berberich, Ivan Markovsky
 2021 Meng Chen, Eduardo Prieto, Keith Moffat, Ivan Markovsky, Zhiyu He
 2020 Matteo Tachi, Paolo Gherardo Carlet, Andrea Favato, Ivan Markovsky
 2019 Linbin Huang, Paolo Gherardo Carlet, Andrea Favato
 2018 Linbin Huang, Miguel Picallo Cruz
 2017 Enric Sánchez Sánchez, Robin Delabays
 2016 Xiaofan Wu, Wei Chen
 2015 Spyros Chatzivasileiadis, Nima Monshizadeh, John W. Simpson-Porco, Marco Todescato, Diego Romeres

Master & Bachelor Students

Nov'13–current supervision of approximately 100 graduate (master & semester) theses
 Nov'13–current supervision of approximately 40 bachelor theses
 Nov'13–current tutoring of approximately 100 graduate students in the D-ITET, RSC, DS, & ESC master programs

Professional Service

(Co-)Organization of Major Scientific Events

- 2025 Publicity Chair at *Conference on Control Technology and Applications*, San Diego, United States
- 2017, '19, '24 Chair at *Champéry Power Conference*, Champéry, Switzerland
- 2024 Workshop Chair at *European Control Conference*, Stockholm, Sweden
- 2023 Co-Chair at NCCR Symposium on *Complex Interconnected Systems and decision making in measure spaces*
- 2022 Chair at IFAC Workshop on *Distributed Estimation and Control in Networked Systems*, Zürich, Switzerland
- 2022 Chair NCCR Symposium on *Systems Theory of Algorithms*, Zürich, Switzerland
- 2020 Chair at Workshop on Emerging Topics in Control of Power Systems, Stockholm, Sweden
- 2019 Publicity Chair at *ACM e-Energy Conference*, Phoenix, United States, June, 2019
- 2018 Co-Chair at *Vistas in Control: ETH Control Workshop*, ETH Zürich, Switzerland
- 2016, '18, '19 Host of *EECI International Graduate School on Control*, ETH Zürich, Switzerland
- 2015 Co-Chair of *MSE Winter School Holistic Modelling and Control of Energy Systems*, Ohlstadt, Germany

Organization of Conference Satellite Events, Workshops, & Tutorials

- 2021 *Control for Autonomous Cities*, CDC, Austin, US
- 2020 *Emerging challenges in stability, control, & optimization of power systems* at ECC, St. Petersburg, Russia
- 2019 *Distributed control and optimization for autonomous power grids* at ECC, Naples, Italy
- 2019 *Thinking Outside the "Black Box" - Analytical Foundations of Power System Research* at PESGM, Atlanta, US
- 2016 *Optimization and Control for Tomorrow's Power Systems* at ECC, Aalborg, Denmark
- 2012 *Synchronization in Coupled Oscillators: Theory and Applications* at CDC, Maui, US

Editorial Service for Journals

- Nov'23–current Senior Editor for *Automatica*
- 2022–2023 Guest Editor for *IEEE Control Systems Magazine* for double special issue on *Data-Driven Control*
- 2022–2023 Guest Editor for *IEEE Transactions on Power Delivery* for special section on *Advances in Research and Applications of Power Electronics in T&D Systems*
- 2021–current Editorial Advisory Board of *International Journal of Control*
- 2020–current Editorial Board of *Annual Reviews in Control*
- 2018–2022 Associate Editor for *Automatica*
- 2016 Guest Editor for *IEEE Transactions on Smart Grid* special issue *Distributed Control and Efficient Optimization Methods for Smart Grid*

Selected Technical Program Committees for Conferences

Annual Learning for Dynamics and Control Conference (L4DC) ◦ IEEE Conference on Decision and Control (CDC) ◦ IFAC World Congress ◦ IFAC Workshop on Distributed Estimation and Control in Networked Systems (NecSys) ◦ IFAC Symposium on System Identification ◦ IEEE International Conference on Smart Grid Communications (SmartGridComm) ◦ IEEE Workshop on Control and Modeling for Power Electronics (COMPEL) ◦ IEEE International Conference on Smart Grid Synchronized Measurements and Analytics (SGSMA) ◦ Iranian Smart Grid Conference (SGC) ◦ IEEE Global Conference on Signal and Information Processing (GlobalSIP) ◦ IEEE International Conference on Data Mining (ICDM) ◦ Greenmetrics (Sigmetrics) ◦ International School and Conference on Network Science (NetSci)

Selected Funding Review Panels

ERC Consolidator Grant Remote Referee ◦ Helmholtz Association of German Research Centres ◦ Swiss National Science Foundation (SNSF) ◦ SNSF Ambizione Energy ◦ German Research Foundation (DFG) ◦ DFG Leibnitz Preis ◦ DFG Emmy Noether-Programm ◦ DFG Priority Program Hybrid and multimodal energy systems: System theoretical methods for the transformation and operation of complex networks ◦ Deutsche Bundesstiftung Umwelt ◦ French National Research Agency ◦ Netherlands Organisation for Scientific Research ◦ Italian Ministry for Education University and Research ◦ National Research, Development and Innovation Office of Hungary ◦ Chilean National Science and Technology Commission

Selected Technical Committee Memberships

IFAC Technical Committee 1.5 Networked Systems ◦ IEEE CSS TC on System Identification and Adaptive Control ◦ IEEE CSS TC on Smart Grid ◦ Global Network of Synchrophasor Solutions Steering Committee

Selected Professional Affiliations

Senior Member, Institute for Electrical and Electronics Engineers (IEEE) ◦ Member, Society for Industrial and Applied Mathematics (SIAM) ◦ Member, International Federation of Automatic Control (IFAC)

Plenaries, Keynotes, & Invited Talks

- 2024 Plenary at Chinese Control and Decision Conference
- 2023 Plenary at European Research Network System Identification ◦ Plenary at International Conference on System Theory, Control and Computing ◦ Nordic Congress of Mathematicians ◦ POSTECH University ◦ Rutgers University ◦ Cranfield University
- 2022 Plenary at Leibniz MMS Days ◦ Fraunhofer ILES Hamburg ◦ 2 × National Renewable Energy Laboratory ◦ KTH Stockholm ◦ POSYTYF Webinar ◦ University of Nottingham
- 2021 Plenary at Programme Gaspard Monge Days ◦ Oberwolfach Workshop ◦ SIAM DS Workshop ◦ Sharif University ◦ UC San Diego ◦ SICC Workshop ◦ ECC Workshop ◦ Powertech Panel ◦ Control Meets Learning Virtual Seminar Series ◦ IFAC Optimal Control Seminar ◦ ETH Energy Week ◦ 2 × CDC Workshops
- 2020 Plenary at European Control Conference ◦ 2 × Peking University ◦ KTH Stockholm ◦ Technion ◦ Georgia Tech Energy Systems and Optimization Workshop ◦ Conference on Complex Systems ◦ CDC Workshop ◦ Distributed Estimation & Optimization in Dynamical Systems Online Seminar ◦ ECCE Workshop ◦ Workshop on Emerging Topics in Control of Power Systems ◦ National Renewable Energy Laboratory ◦ IFAC World Congress Workshop ◦ KTH Digital Future Series ◦ ECC Workshop ◦ ETH Zürich Symposium on Resilience & Performance of Networked Systems
- 2019 Plenary at Mediterranean Conference on Control and Automation ◦ Workshop on Resilient Control of Infrastructure Networks ◦ ECC Workshop ◦ ETH Zürich Learning & Adaptive Systems Lab Seminar ◦ ETH Zürich Robotic Systems Lab Seminar ◦ 2 × Isaac Newton Institute for Mathematical Sciences ◦ Innovative Optimization and Control Methods for Highly Distributed Autonomous Systems Workshop ◦ CU Boulder ◦ KTH Stockholm ◦ International Conference on Control, Instrumentation, and Automation Plenary
- 2018 Plenary at IFAC Workshop on Distributed Estimation and Control in Networked Systems ◦ Energy-Open Workshop ◦ International Workshop on Advanced Cooperative Systems ◦ Karlsruhe Institute of Technology ◦ UC Berkeley ◦ UC Santa Barbara ◦ Le Laboratoire GIPSA-lab ◦ RTE Workshop on Power Systems
- 2017 Melbourne Workshop on Future Power Systems ◦ Austria Institute of Technology ◦ CoNDyNet Workshop ◦ ETH Zürich Institute for Theoretical Studies ◦ Ruhr Universität Bochum ◦ Workshop on Optimization and Inference for Physical Flows on Networks ◦ Champéry Power Conferece
- 2016 UC Berkeley ◦ National Renewable Energy Laboratory ◦ Plenary at Greenmetrics ◦ KTH Stockholm ◦

Institute for Mathematics and its Applications ◦ ETH Zürich Computer Science Departmental Talk ◦ ACC Workshop ◦ 2 × ECC Workshop ◦ Seminaire d'Automatique du Plateau de Saclay

2015 KAUST ◦ Skoltech ◦ École Polytechnique Fédérale de Lausanne ◦ Social Norms and Institutions Workshop ◦ Technical University Berlin ◦ Université Catholique de Louvain ◦ Swiss Federal Laboratories for Materials Science and Technology ◦ Grid Science Winter School & Conference

2014 University of Cambridge ◦ University of Oxford ◦ UC Los Angeles ◦ UC San Diego ◦ Stanford University ◦ CU Boulder ◦ National Renewable Energy Laboratory ◦ California Institute of Technology ◦ Swissgrid ◦ University of Padova ◦ Dagstuhl Workshop ◦ ABB Corporate Research Center ◦ ETH Zürich ◦ Lund University ◦ University of Minnesota ◦ ACC Workshop ◦ Rand Corporation

2013 University of Southern California ◦ 2 × Los Alamos Center for Nonlinear Studies ◦ Technical University Munich ◦ ETH Zürich ◦ UC Los Angeles

2012 UI Urbana-Champaign ◦ University of Stuttgart ◦ Siemens ◦ 2 × Los Alamos Center for Nonlinear Studies ◦ ETH Zürich ◦ Optimization and Control for Smart Grids ◦ CDC Workshop ◦ UC Los Angeles

2011 UC Santa Barbara Institute for Energy Efficiency ◦ CDC Workshop ◦ Los Alamos Center for Nonlinear Studies

2010 University of Toronto ◦ Technical University Munich ◦ UC Santa Barbara ◦ California Institute of Technology

Journal Publications

- [J1] X. He and F Dörfler. Passivity and decentralized stability conditions for grid-forming converters. October 2023. Submitted. Available at <https://arxiv.org/abs/2310.09935>.
- [J2] X. He, L. Huang, I. Subotic, V. Häberle, and F Dörfler. Quantitative stability conditions for grid-forming converters with complex droop control. October 2023. Submitted. Available at <https://arxiv.org/abs/2310.09933>.
- [J3] J. Authier, R. Haider, A. Annaswamy, and F Dörfler. Physics-informed graph neural network for dynamic reconfiguration of power systems. September 2023. Submitted. Available at <https://arxiv.org/abs/2310.00728>.
- [J4] J. Björk, K.H. Johansson, and F. Dörfler. Dynamic virtual power plant design for fast frequency reserves: Coordinating hydro and wind. *IEEE Transactions on Control of Network Systems*, 10(3):1266–1278, September 2023.
- [J5] J.S. Brouillon, G. Ferrari-Trecate, K. Moffat, and F. Dörfler. Power grid parameter estimation without phase measurements: Theory and empirical validation. September 2023. Submitted.
- [J6] M.A. Desai, X. He, L. Huang, and F Dörfler. Saturation-informed current-limiting control for grid-forming converters. September 2023. Submitted.
- [J7] C. Feng, L. Huang, X. He, Y. Wang, F Dörfler, and Q. Chen. Joint oscillation damping and inertia provision service for converter-interfaced generation. September 2023. Submitted. Available at <https://arxiv.org/abs/2309.01321>.
- [J8] V. Häberle, L. Huang, X. He, E. Prieto-Araujo, and F Dörfler. Dynamic ancillary services: From grid codes to transfer function-based converter control. September 2023. Submitted. Available at <https://arxiv.org/abs/2310.01552>.
- [J9] K. Moffat, S. Bolognani, and F. Dörfler. Nullspace power balance and nullspace power flow linearization. September 2023. Submitted.
- [J10] L. Ortmann, S. Bolognani, F. Dörfler, F. Böhm, F. Klein-Helmkamp, and A. Ulbig. Tuning and testing an online feedback optimization controller to provide curative distribution grid flexibility. September 2023. Submitted.

- [J11] V. Häberle, E. Prieto, A. Tayyebi, and F. Dörfler. Grid-forming and spatially distributed control design of dynamic virtual power plants. August 2023. In press. Available at <https://ieeexplore.ieee.org/document/10239108>.
- [J12] A. Tayyebi, A. Anta, and F. Dörfler. Hybrid angle control and almost global stability of grid-forming power converters. *IEEE Transactions on Automatic Control*, 68(7):3842–3857, July 2023.
- [J13] A. Tayyebi, D. Vettoretti, A. Anta, and F. Dörfler. Grid-forming hybrid angle control: Behavior, stability, variants and verification. July 2023. Submitted. Available at <https://arxiv.org/abs/2307.09398>.
- [J14] S. Shafieezadeh-Abadeh, L. Aolaritei, F. Dörfler, and D. Kuhn. New perspectives on regularization and computation in optimal transport-based distributionally robust optimization. June 2023. Submitted. Available at <https://arxiv.org/abs/2303.03900>.
- [J15] F. Dörfler and D. Groß. Control of low-inertia power systems. *Annual Review of Control, Robotics, and Autonomous Systems*, 6(1), May 2023.
- [J16] L. Huang, Z. Jianzhe, J. Lygeros, and F. Dörfler. Robust data-enabled predictive control: Tractable formulations and performance guarantees. *IEEE Transactions on Automatic Control*, 68(5):3163–3170, May 2023.
- [J17] E. Elokda, S. Bolognani, A. Censi, F. Dörfler, and E. Frazzoli. A self-contained Karma economy for the dynamic allocation of common resources. *Dynamic Games and Applications*, pages 1–33, April 2023.
- [J18] M. Picallo, S. Bolognani, and F. Dörfler. Predictive-sensitivity: Beyond singular perturbation for control design on multiple time scales. *IEEE Transactions on Automatic Control*, 68(4):2309–2324, April 2023.
- [J19] F. Dörfler, J. Coulson, and I. Markovskiy. Bridging direct & indirect data-driven control formulations via regularizations and relaxations. *IEEE Transactions on Automatic Control*, 68(2):883–897, January 2023.
- [J20] J.S. Brouillon, F. Dörfler, and G. Ferrari-Trecate. Regularization for distributionally robust state estimation and prediction. 7:2713–2718, 2023.
- [J21] J.S. Brouillon, E. Fabbiani, P. Nahata, K. Moffat, F. Dörfler, and G. Ferrari-Trecate. Bayesian error-in-variables models for the identification of power networks. *IEEE Transactions on Smart Grid*, 14(22):1289–1299, 2023.
- [J22] J. Coulson, H.J. van Waarde, J. Lygeros, and F. Dörfler. A quantitative notion of persistency of excitation and the robust fundamental lemma. *IEEE Control Systems Letters*, 7:1243–1248, 2023.
- [J23] F. Dörfler. Data-driven control: Part one of two: A special issue sampling from a vast and dynamic landscape. *IEEE Control Systems Magazine*, 43(4):24–27, 2023.
- [J24] F. Dörfler. Data-driven control: Part two of two: Hot take: Why not go with models? *IEEE Control Systems Magazine*, 43(6):27–31, 2023.
- [J25] F. Dörfler, P. Tesi, and C. De Persis. On the certainty-equivalence approach to direct data-driven LQR design. *IEEE Transactions on Automatic Control*, 2023. In press. DOI 10.1109/TAC.2023.3253787.
- [J26] E. Elokda, C. Cenedese, K. Zhang, J. Lygeros, E. Frazzoli, and F. Dörfler. Carma: Fair and efficient bottleneck congestion management via non-tradable karma credits. 2023. Submitted. Available at <https://arxiv.org/abs/2208.07113>.
- [J27] X. He, V. Häberle, I. Subotic, and F. Dörfler. Nonlinear stability of complex droop control in converter-based power systems. *IEEE Control Systems Letters*, 7:1327–1332, 2023.

- [J28] L. Huang, D. Wang, H. Xin, P. Ju, X. Wang, K.H. Johansson, and F. Dörfler. Gain and phase: Decentralized stability conditions for power electronics-dominated power systems. 2023. Submitted. Available at <https://arxiv.org/abs/2309.08037>.
- [J29] N. Lanzetti, A. Terpin, and F. Dörfler. Dynamic programming in probability spaces via optimal transport. 2023. To appear. Available at <https://arxiv.org/abs/2302.13550>.
- [J30] I. Markovskiy and F. Dörfler. Identifiability in the behavioral setting. *IEEE Transactions on Automatic Control*, 68(3):1667–1677, 2023.
- [J31] I. Markovskiy, L. Huang, and F. Dörfler. Data-driven control based on behavioral approach: From theory to applications in power systems. *IEEE Control Systems Magazine*, 43(4):28–68, 2023.
- [J32] A. Martin, L. Furieri, F. Dörfler, and G. Ferrari-Trecate. On the guarantees of minimizing regret in receding horizon. 2023. Submitted. Available at <https://arxiv.org/abs/2306.14561>.
- [J33] H. Ossareh and F. Dörfler. Formula for estimating the frequency response of lti systems from noisy finite-length datasets. 2023. Submitted.
- [J34] G. Panagiotis, G. Belgioioso, C. Cenedese, M. Fochesato, J. Lygeros, and F. Dörfler. Big Hype: Best intervention in games via distributed hypergradient descent. 2023. Submitted. Available at <https://arxiv.org/abs/2303.01101>.
- [J35] M.K. Singh, S. Dhople, F. Dörfler, and G.B. Giannakis. Time-domain generalization of Kron reduction. *IEEE Control Systems Letters*, 7:259–264, 2023.
- [J36] G. Belgioioso, D. Liao-McPherson, M. Hudoba de Badyn, S. Bolognani, R. Smith, J. Lygeros, and F. Dörfler. Online feedback equilibrium seeking. October 2022. Submitted. Available at <https://arxiv.org/abs/2210.12088>.
- [J37] V. Häberle, M.W. Fisher, E. Prieto, and F. Dörfler. Control design of dynamic virtual power plants: An adaptive divide-and-conquer approach. *IEEE Transactions on Power Systems*, 37(5):4040–4053, September 2022.
- [J38] M. Chen, D. Zhou, A. Tayyebi, E. Prieto, F. Dörfler, and F. Blaabjerg. Augmentation of generalized multivariable grid-forming control for power converters with cascaded controllers. August 2022. Submitted. Available at <https://arxiv.org/abs/2202.08639>.
- [J39] X. He, V. Häberle, and F. Dörfler. Complex-frequency synchronization of converter-based power systems. August 2022. Submitted. Available at <https://arxiv.org/abs/2208.13860>.
- [J40] L. Aolaritei, S. Shafieezadeh-Abadeh, and F. Dörfler. The performance of Wasserstein distributionally robust m-estimators in high dimensions. June 2022. Submitted. Available at <https://arxiv.org/abs/2206.13269>.
- [J41] W. Mei, G. Chen, F. Bullo, and F. Dörfler. Rethinking the micro-foundation of opinion dynamics: Rich consequences of an inconspicuous change of an inconspicuous change. *Physical Review Research*, 4(2):23213–23223, June 2022.
- [J42] I. Subotic, A. Hauswirth, and F. Dörfler. Quantitative sensitivity bounds for nonlinear programming and time-varying optimization. *IEEE Transactions on Automatic Control*, 67(7):2829–2842, June 2022.
- [J43] L. Huang, J. Coulson, J. Lygeros, and F. Dörfler. Decentralized data-enabled predictive control for power system oscillation damping. *IEEE Transactions on Control Systems Technology*, 30(3):1065–1077, May 2022.
- [J44] L. Aolaritei, N. Lanzetti, C. Hongruiyu, and F. Dörfler. Distributional uncertainty propagation via optimal transport. April 2022. Submitted. Available at <https://arxiv.org/abs/2205.00343>.
- [J45] Z. He, S. Bolognani, J. He, F. Dörfler, and X. Guan. Model-free nonlinear feedback optimization. January 2022. Submitted. Available at <https://arxiv.org/abs/2201.02395>.

- [J46] P. Carlet, Favato. A., S. Bolognani, and F. Dörfler. Data-driven continuous-set predictive current control for synchronous motor drives. *IEEE Transactions on Power Electronics*, 37(6):6637–6646, 2022.
- [J47] P. Carlet, Favato. A., R. Torchio, F. Toso, S. Bolognani, and F. Dörfler. Real-time feasibility of data-driven predictive control for synchronous motor drives. *IEEE Transactions on Power Electronics*, 38(2):1672–1682, 2022.
- [J48] M. Chen, D. Zhou, A. Tayyebi, E. Prieto, F. Dörfler, and F. Blaabjerg. Generalized multivariable grid-forming control design for power converters. *IEEE Transactions on Smart Grid*, 13(4):2873–2885, 2022.
- [J49] M. Chen, D. Zhou, A. Tayyebi, E. Prieto, F. Dörfler, and F. Blaabjerg. On power control of grid-forming converters: Modeling, controllability, and full-state feedback design. 2022. In press. DOI: 10.1109/TSTE.2023.3271317.
- [J50] J. Coulson, J. Lygeros, and F. Dörfler. Distributionally robust chance constrained data-enabled predictive control. *IEEE Transactions on Automatic Control*, 67(7):3289–3304, 2022.
- [J51] M.W. Fisher, G. Hug, and F. Dörfler. Approximation by simple poles – part i: Density and geometric convergence rate in hardy space. 2022. To appear. Available at <https://arxiv.org/abs/2207.03982>.
- [J52] M.W. Fisher, G. Hug, and F. Dörfler. Approximation by simple poles – part ii: System level synthesis beyond finite impulse response. 2022. Submitted. Available at <https://arxiv.org/abs/2203.16765>.
- [J53] L. Huang, J. Lygeros, and F. Dörfler. Robust and kernelized data-enabled predictive control for nonlinear systems. 2022. In press. DOI 10.1109/TCST.2023.3329334.
- [J54] N. Lanzetti, S. Bolognani, and F. Dörfler. First-order conditions for optimization in the Wasserstein space. 2022. Submitted. Available at <https://arxiv.org/abs/2209.12197>.
- [J55] B. Marinescu, O. Gomis, F. Dörfler, H. Schulte, and L. Sigrist. Dynamic virtual power plant: a new concept for grid integration of renewable energy sources. *IEEE Access*, 10:104980–104995, 2022.
- [J56] I. Markovskiy and F. Dörfler. Data-driven dynamic interpolation and approximation. *Automatica*, 135:110008, 2022.
- [J57] I. Markovskiy, E. Prieto, and F. Dörfler. On the persistency of excitation. *Automatica*, 147:110657, 2022.
- [J58] W. Mei, J.M. Hendrickx, G. Chen, F. Bullo, and F. Dörfler. Convergence, consensus and dissensus in the weighted-median opinion dynamics. 2022. Submitted. Available at <https://arxiv.org/abs/2212.08808>.
- [J59] L. Ortmann, J. Maeght, P. Panciatici, F. Dörfler, and S. Bolognani. Online feedback optimization for transmission grid operation. 2022. Submitted. Available at <https://arxiv.org/abs/2212.07795>.
- [J60] M. Picallo, D. Liao-McPherson, S. Bolognani, and F. Dörfler. Cross-layer design for real-time grid operation: Estimation, optimization and power flow. *Electric Power Systems Research*, 212:108378, 2022.
- [J61] M. Picallo, L. Ortmann, S. Bolognani, and F. Dörfler. Adaptive real-time grid operation via online feedback optimization with sensitivity estimation. *Electric Power Systems Research*, 212:108405, 2022.
- [J62] A. Tayyebi, A. Magdaleno, D. Vettoretti, M. Chen, E. Prieto-Araujo, A. Anta, and F. Dörfler. System-level performance and robustness of the grid-forming hybrid angle control. *Electric Power Systems Research*, 212:108503, 2022.

- [J63] A. Zanardi, G. Zardini, S. Srinivasan, A. Censi, F. Dörfler, and E. Frazzoli. Posetal games: Efficiency, existence, and refinement of equilibria in games with prioritized metrics. *IEEE Robotics and Automation Letters*, 7(2):1292–1299, 2022.
- [J64] I. Subotic, D. Groß, M. Colombino, and F. Dörfler. A Lyapunov framework for nested dynamical systems on multiple time scales with application to converter-based power systems. *IEEE Transactions on Automatic Control*, 66(12):5909–5924, December 2021.
- [J65] A. Hauswirth, S. Bolognani, G Hug, and F. Dörfler. Timescale separation in autonomous optimization. *IEEE Transactions on Automatic Control*, 66(2):611–624, February 2021.
- [J66] A. Hauswirth, S. Bolognani, G Hug, and F. Dörfler. Optimization algorithms as robust feedback controllers. January 2021. Submitted. Available at <http://arxiv.org/abs/2103.11329>.
- [J67] F. Liu, S. Cui, W. Mei, F. Dörfler, and M. Buss. Interplay between homophily-based appraisal dynamics and influence-based opinion dynamics: Modeling and analysis. *IEEE Control Systems Letters*, 5(1):181–186, January 2021.
- [J68] E. Elokda, S. Bolognani, A. Censi, E. Frazzoli, and F. Dörfler. Dynamic population games. 2021. Available at <https://www.research-collection.ethz.ch/handle/20.500.11850/475746>.
- [J69] V. Häberle, A. Hauswirth, L. Ortmann, S. Bolognani, and F. Dörfler. Non-convex feedback optimization with input and output constraints. *IEEE Control Systems Letters*, 5(1):343–348, 2021.
- [J70] A. Hauswirth, S. Bolognani, and F. Dörfler. Projected Dynamical Systems on Irregular Non-Euclidean Domains for Nonlinear Optimization. *SIAM Journal on Control and Optimization*, 59(1):635–668, 2021.
- [J71] A. Hauswirth, S. Bolognani, G Hug, and F. Dörfler. Corrigendum to: "Timescale Separation in Autonomous Optimization". *IEEE Transactions on Automatic Control*, 66(12):6197–6198, 2021.
- [J72] I. Markovskiy and F. Dörfler. Behavioral systems theory in data-driven analysis, signal processing, and control. *Annual Reviews in Control*, 52:42–64, 2021.
- [J73] N. Pagan, W. Mei, Li C., and F. Dörfler. A meritocratic network formation model for the rise of social media influencers. *Nature Communications*, 12(6865), 2021.
- [J74] G. Chen, W. Mei, N. Friedkin, and F Dörfler. Structural balance and interpersonal appraisals dynamics: Beyond all-to-all and two-faction networks. December 2020. To appear.
- [J75] D. Alpayo, F. Dörfler, and J. Lygeros. An extended Kalman filter for data-enabled predictive control. *IEEE Control Systems Letters*, 4(4):994–999, October 2020.
- [J76] L. Huang, H. Xin, and F. Dörfler. H_∞ -Control of Grid-Connected Converters: Design, Objectives and Decentralized Stability Certificates. *IEEE Transactions on Smart Grid*, 11(5):3805–3816, September 2020.
- [J77] A. Hauswirth, F. Dörfler, and A. Teel. On the differentiability of projected trajectories and the robust convergence of non-convex anti-windup gradient flows. *IEEE Control Systems Letters*, 4(3):620–625, July 2020.
- [J78] B. K. Poolla, S. Bolognani, N. Li, and F. Dörfler. A market mechanism for virtual inertia. *IEEE Transactions on Smart Grid*, 11(4):1949–3053, July 2020.
- [J79] A. Tayyebi, D. Groß, A. Anta, F. Kupzog, and F. Dörfler. Frequency stability of synchronous machines and grid-forming power converters. *IEEE Journal of Emerging and Selected Topics in Power Electronics*, 8(2):1004–1018, June 2020.
- [J80] 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*, 65(5):2032–2045, May 2020.

- [J81] C. Arghir and F. Dörfler. The electronic realization of synchronous machines: model matching, angle tracking and energy shaping techniques. *IEEE Transactions on Power Electronics*, 35(4):4398–4410, April 2020.
- [J82] E. Sanchez, D. Groß, E. Prieto, F. Dörfler, and O. Gomis. Optimal Multivariable MMC Energy-Based Control for DC Voltage Regulation in HVDC Applications. *IEEE Transactions on Power Delivery*, 35(2):999–1009, April 2020.
- [J83] A. Hauswirth, F. Dörfler, and A. Teel. Anti-windup approximations of oblique projected dynamics for feedback-based optimization. *SIAM Journal on Control and Optimization*, 2020. Submitted. Available at <https://arxiv.org/abs/2003.00478>.
- [J84] L. Ortmann, A. Hauswirth, I. Caduff, F. Dörfler, and S. Bolognani. Experimental validation of feedback optimization in power distribution grids. *Electric Power Systems Research*, 189:106782, 2020.
- [J85] M. Picallo, S. Bolognani, and F. Dörfler. Closing the loop: Dynamic state estimation and feedback optimization of distribution grids. *Electric Power Systems Research*, 189:106753, 2020.
- [J86] 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*, 64(10):3967–3982, October 2019.
- [J87] 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*, 6(3):1148–1160, September 2019.
- [J88] M. Colombino, D. Groß, J.S. Brouillon, and F. Dörfler. Global phase and magnitude synchronization of coupled oscillators with application to the control of grid-forming power inverters. *IEEE Transactions on Automatic Control*, 64(11):4496 – 4511, February 2019.
- [J89] B. K. Poolla, D. Groß, and F. Dörfler. Placement and implementation of grid-forming and grid-following virtual inertia and fast frequency response. *IEEE Transactions on Power Systems*, 34(4):3035 – 3046, January 2019.
- [J90] R. Delabays, P. Jacquod, and F. Dörfler. The Kuramoto model on oriented and signed graphs. *SIAM Journal on Applied Dynamical Systems*, 18(1):458–480, 2019.
- [J91] E. Elokda, J. Coulson, P. Beuchat, J. Lygeros, and F. Dörfler. Data-enabled predictive control for quadcopters. *International Journal of Robust and Nonlinear Control*, 2019. In press. DOI <https://doi.org/10.1002/rnc.5686>.
- [J92] Y. Khayat, Q. Shafiee, R. Heydari, T. Dragicevic, M. Naderi, J. W. Simpson-Porco, F. Dörfler, M. Fathi, F. Blaabjerg, and H. Bevrani. On the secondary control architectures of ac microgrids: A survey. *IEEE Transactions on Power Electronics*, 35(6):6482–6500, 2019.
- [J93] N. Pagan and F. Dörfler. Game theoretical inference of human behavior in social networks. *Nature Communications*, 10(5507), 2019.
- [J94] G. Weiss, F. Dörfler, and Y. Levron. A stability theorem for networks containing synchronous generators. *Systems & Control Letters*, 134:104561, 2019.
- [J95] Y. Xiao, F. Dörfler, and M. van der Schaar. Incentive design in peer review: Rating and repeated endogenous matching. *IEEE Transactions on Network Science and Engineering*, 6(4):2327–4697, 2019.
- [J96] C. Arghir, T. Jouini, and F. Dörfler. Grid-forming control for power converters based on matching of synchronous machines. *Automatica*, 95:273–282, September 2018.
- [J97] M. Todescato, J. W. Simpson-Porco, F. Dörfler, R. Carli, and F. Bullo. Online distributed voltage stress minimization by optimal feedback reactive power control. *IEEE Transactions on Control of Network Systems*, 5(3):1467–1478, July 2018.

- [J98] L. Aolaritei, S. Bolognani, and F. Dörfler. Hierarchical and distributed monitoring of voltage stability in distribution networks. *IEEE Transactions on Power Systems*, 33(6):6705–6714, June 2018.
- [J99] 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.
- [J100] C. De Persis, E.R.A. Weitenberg, and F. Dörfler. A power consensus algorithm for DC microgrids. *Automatica*, 89:364–375, February 2018.
- [J101] D. Groß, C. Arghir, and F. Dörfler. On the steady-state behavior of a nonlinear power system model. *Automatica*, 90:248–254, 2018.
- [J102] A. Hauswirth, S. Bolognani, G Hug, and F. Dörfler. Generic Existence of Unique Lagrange Multipliers in AC Optimal Power Flow. *IEEE Control Systems Letters*, 2(4):791–796, 2018.
- [J103] L. Huang, H. Xin, W. Dong, and F. Dörfler. Impacts of Grid Structure on PLL-Synchronization Stability of Converter-Integrated Power Systems. *IEEE Transactions on Power Electronics*, 2018. Submitted. Available at <https://arxiv.org/abs/1903.05489>.
- [J104] 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.
- [J105] S. Bolognani, E. Arcari, and F. Dörfler. A fast method for real-time chance-constrained decision with application to power systems. *IEEE Control Systems Letters*, 1(1):152 – 157, 2017.
- [J106] T. Borsche and F. Dörfler. On placement of synthetic inertia with explicit time-domain constraints. *IEEE Transactions on Power Systems*, 2017. Submitted. Available at <https://arxiv.org/abs/1705.03244>.
- [J107] F. Dörfler and S. Grammatico. Gather-and-broadcast frequency control in power systems. *Automatica*, 79:296–305, 2017.
- [J108] M. Fazlyab, F. Dörfler, and V. M. Preciado. Optimal network design for synchronization of coupled oscillators. *Automatica*, 84:181–189, 2017.
- [J109] D. Molzahn, F. Dörfler, H. Sandberg, S. H. Low, S. Chakrabarti, R. Baldick, and J. Lavaei. A survey of distributed optimization and control algorithms for electric power systems. *IEEE Transactions on Smart Grid*, 8(6):2941–2962, 2017.
- [J110] J. Schiffer, F. Dörfler, and E. Fridmann. Robustness of distributed averaging control in power systems: Time delays & dynamic communication topology. *Automatica*, 80:261–271, 2017.
- [J111] J. W. Simpson-Porco, F. Dörfler, and F. Bullo. Voltage stabilization in microgrids via quadratic droop control. *IEEE Transactions on Automatic Control*, 3(62):1239 – 1253, 2017.
- [J112] M. Sinha, F. Dörfler, B. Johnson, and S. Dhople. Uncovering droop control laws embedded within the nonlinear dynamics of Van der Pol oscillators. *IEEE Transactions on Control of Network Systems*, 2(4):347 – 358, 2017.
- [J113] J. W. Simpson-Porco, F. Dörfler, and F. Bullo. Voltage collapse in complex power grids. *Nature Communications*, 7:1–8, February 2016.
- [J114] F. Dörfler, J. W. Simpson-Porco, and F. Bullo. Breaking the Hierarchy: Distributed Control & Economic Optimality in Microgrids. *IEEE Transactions on Control of Network Systems*, 3(3):241–253, 2016.
- [J115] B. Johnson, M. Sinha, N. Ainsworth, F. Dörfler, and S. Dhople. Synthesizing virtual oscillators to control islanded inverters. *IEEE Transactions on Power Electronics*, 31(8):6002 – 6015, 2016.
- [J116] X. Wu, F. Dörfler, and M. R. Jovanovic. Input-output analysis and decentralized optimal control of inter-area oscillations in power systems. *IEEE Transactions on Power Systems*, 31(3):2434 – 2444, 2016.

- [J117] J. W. Simpson-Porco, Q. Shafiee, F. Dörfler, J. M. Vasquez, J. M. Guerrero, and F. Bullo. Secondary frequency and voltage control of islanded microgrids via distributed averaging. *IEEE Transactions on Industrial Electronics*, 62(15):7025 – 7038, November 2015.
- [J118] F. Pasqualetti, F. Dörfler, and F. Bullo. Control-theoretic methods for cyber-physical security. *IEEE Control Systems Magazine*, 35(1):110–127, February 2015.
- [J119] D. Mehta, N. Daleo, F. Dörfler, and J. D. Hauenstein. Algebraic geometrization of the kuramoto model: Equilibria and stability analysis. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 25(5), January 2015.
- [J120] J. W. Simpson-Porco, F. Dörfler, and F. Bullo. On resistive networks of constant power devices. *IEEE Transactions on Circuits and Systems II: Express Briefs*, 62(8):811–815, 2015.
- [J121] J. Zhao and F. Dörfler. Distributed control and optimization in DC microgrids. *Automatica*, 61:18 – 26, 2015.
- [J122] S. Dhople, B. Johnson, F. Dörfler, and A. Hamadeh. Synchronization of nonlinear circuits in dynamic electrical networks with general topologies. *IEEE Transactions on Circuits and Systems I: Regular Papers*, 61(9):2677–2690, September 2014.
- [J123] F. Dörfler, M. R. Jovanovic, M. Chertkov, and F. Bullo. Sparsity-promoting optimal wide-area control of power networks. *IEEE Transactions on Power Systems*, 29(5):2281–2291, September 2014.
- [J124] F. Dörfler and F. Bullo. Synchronization in complex oscillator networks: A survey. *Automatica*, 50(6):1539–1564, June 2014.
- [J125] F. Pasqualetti, F. Dörfler, and F. Bullo. Attack detection and identification in cyber-physical systems. *IEEE Transactions on Automatic Control*, 58(11):2715–2729, November 2013.
- [J126] F. Dörfler, F. Pasqualetti, and F. Bullo. Continuous-time distributed observers with discrete communication. *IEEE Journal of Selected Topics in Signal Processing*, 7(2):296–304, April 2013.
- [J127] F. Dörfler, M. Chertkov, and F. Bullo. Synchronization in complex oscillator networks and smart grids. *Proceedings of the National Academy of Sciences*, 110(6):2005–2010, February 2013.
- [J128] F. Dörfler and F. Bullo. Kron reduction of graphs with applications to electrical networks. *IEEE Transactions on Circuits and Systems I: Regular Papers*, 60(1):150–163, January 2013.
- [J129] J. W. Simpson-Porco, F. Dörfler, and F. Bullo. Synchronization and power sharing for droop-controlled inverters in islanded microgrids. *Automatica*, 49(9):2603–2611, 2013.
- [J130] F. Dörfler and F. Bullo. Synchronization and transient stability in power networks and non-uniform Kuramoto oscillators. *SIAM Journal on Control and Optimization*, 50(3):1616–1642, 2012.
- [J131] F. Dörfler and F. Bullo. On the critical coupling for Kuramoto oscillators. *SIAM Journal on Applied Dynamical Systems*, 10(3):1070–1099, 2011.
- [J132] F. Dörfler and B. Francis. Geometric Analysis of the Formation Problem for Autonomous Robots. *IEEE Transactions on Automatic Control*, 55(10):2379–2384, October 2010.
- [J133] F. Dörfler, J. K. Johnsen, and F. Allgöwer. An Introduction to Interconnection and Damping Assignment Passivity-Based Control in Process Engineering. *Journal of Process Control*, 19(9):1413–1426, October 2009.

Refereed Conference Proceedings

- [C1] L. Aolaritei, M. Fochesato, J. Lygeros, and F. Dörfler. Wassestein tube MPC with exact uncertainty propagation. In *Proceedings of the 62nd IEEE Conference on Decision and Control*, December 2023. Submitted. Available at <https://arxiv.org/abs/2304.12093>.

- [C2] L. Aolaritei, N. Lanzetti, and F. Dörfler. Capture, propagate, and control distributional uncertainty. In *Proceedings of the 62nd IEEE Conference on Decision and Control*, December 2023. To appear. Available at <https://arxiv.org/abs/2304.02235>.
- [C3] G. Belgioioso, S. Bolognani, G. Pejrani, and F. Dörfler. Tutorial on congestion control in multi-area transmission grids via online feedback equilibrium seeking. In *Proceedings of the 62nd IEEE Conference on Decision and Control*, December 2023. To appear. Available at <https://arxiv.org/abs/2310.15924>.
- [C4] P. Grontas, C. Cenedese, M. Fochesato, G. Belgioioso, J. Lygeros, and F. Dörfler. Designing optimal personalized incentive for traffic routing using big hype algorithm. In *Proceedings of the 62nd IEEE Conference on Decision and Control*, December 2023. To appear. Available at <https://arxiv.org/abs/2304.12004>.
- [C5] V. Häberle, L. Huang, X. He, E. Prieto, R. Smith, and F. Dörfler. MIMO grid impedance identification of three-phase power systems: Parametric vs. nonparametric approaches. In *Proceedings of the 62nd IEEE Conference on Decision and Control*, December 2023. To appear. Available at <https://arxiv.org/abs/2305.00192>.
- [C6] N. Lanzetti, E. Balta, D. Liao-McPherson, and F. Dörfler. Stochastic Wasserstein gradient flows using streaming data with an application in predictive maintenance. In *IFAC World Congress*, December 2023. In press. Available at <https://arxiv.org/abs/2301.12461>.
- [C7] N. Lanzetti, F. Dörfler, and N. Pagan. The impact of recommendation systems on opinion dynamics: Microscopic versus macroscopic effects. In *Proceedings of the 62nd IEEE Conference on Decision and Control*, December 2023. To appear. Available at <https://arxiv.org/abs/2309.08967>.
- [C8] A. Padoan, J. Coulson, and F. Dörfler. Controller implementability: a data-driven approach. In *Proceedings of the 62nd IEEE Conference on Decision and Control*, December 2023. To appear. Available at <https://arxiv.org/abs/2310.15347>.
- [C9] A. Padoan, F. Dörfler, and J. Lygeros. Data-driven representations of convex and conical behaviors. In *Proceedings of the 62nd IEEE Conference on Decision and Control*, December 2023. To appear. Available at <https://arxiv.org/abs/2310.15354>.
- [C10] F. Zhao, F. Dörfler, and K. You. Data-enabled policy optimization for the Linear Quadratic Regulator. In *Proceedings of the 62nd IEEE Conference on Decision and Control*, December 2023. To appear. Available at <https://arxiv.org/abs/2303.17958>.
- [C11] L. Ortmann, C. Rubin, C. Scozzafava, J. Lehmann, S. Bolognani, and F. Dörfler. Deployment of an online feedback optimization controller for reactive power flow optimization in a distribution grid. In *IEEE PES Innovative Smart Grid Technologies*, October 2023. To appear. Available at <https://arxiv.org/abs/2305.06702>.
- [C12] M. Andrejewski, V. Häberle, N. Goldschmidt, F. Dörfler, and H. Schulte. Experimental validation of a dynamic virtual power plant concept based on multiple-converter power hardware-in-the-loop test bench. In *22nd Wind & Solar Integration Workshop, Copenhagen*, September 2023. To appear. Available at <https://arxiv.org/abs/2309.00882>.
- [C13] Kai Zhang, Kenan Zhang, L. Huang, G. Belgioioso, J. Lygeros, and F. Dörfler. Data-enabled predictive control for dynamic traffic routing. August 2023. Submitted.
- [C14] V. Behrunani, G. Belgioioso, A. Irvine, P. Heer, F. Dörfler, and J. Lygeros. Designing fairness in autonomous peer-to-peer energy trading. In *IFAC World Congress*, July 2023. In press.
- [C15] G. Belgioioso, D. Liao-McPherson, M. Hudoba de Badyn, N. Pelzmann, J. Lygeros, and F. Dörfler. Stability and robustness of distributed suboptimal model predictive control. In *IFAC World Congress*, July 2023. In press. Available at <https://arxiv.org/abs/2211.07341>.

- [C16] J.S. Brouillon, F. Dörfler, and G. Ferrari-Trecate. Minimal regret state estimation of time-varying systems. In *IFAC World Congress*, July 2023. In press.
- [C17] E. Elokda, C. Cenedese, K. Zhang, J. Lygeros, and F. Dörfler. CARMA: fair and efficient bottleneck congestion management with KARMA. In *Transportation and Logistics*, July 2023. In press. Available at <https://arxiv.org/abs/2208.07113>.
- [C18] A. Martin, L. Furieri, F. Dörfler, J. Lygeros, and G. Ferrari-Trecate. Follow the clairvoyant: an imitation learning approach to optimal control. In *IFAC World Congress*, July 2023. In press. Available at <https://arxiv.org/abs/2211.07389>.
- [C19] M. Schneeberger, F. Dörfler, and S. Mastellone. SOS construction of compatible control Lyapunov and barrier functions. In *IFAC World Congress*, July 2023. In press. Available at <https://arxiv.org/abs/2305.01222>.
- [C20] J. Berberich, A. Iannelli, A. Padoan, J. Coulson, F. Dörfler, and F. Allgöwer. A quantitative and constructive proof of Willems’ fundamental lemma and its implications. In *Proceedings of the American Control Conference*, pages 4155–4160, 2023.
- [C21] C.E. Breukelmann, S. Hall, G. Belgioioso, and F. Dörfler. Carbon-aware computing in a network of datacenters: A hierarchical game-theoretic approach. 2023. Submitted.
- [C22] S. Chandrasekaran, V. Varadan, S.S. Krishnan, F. Dörfler, and M.H. Mamduhi. Distributed state estimation for linear time-varying systems with sensor network delays. In *European Control Conference*, 2023. In press. Available at <https://arxiv.org/abs/2305.00190>.
- [C23] B.P. Eder, A. Anta, M. Markus, and F. Dörfler. h_∞ -based double grid forming controller of modular converters in a hybrid ac/dc grid. In *IEEE 24th Workshop on Control and Modeling for Power Electronics (COMPEL)*, 2023.
- [C24] A.M. Eds. Annaswamy, K.H. Johansson, and G.J. Pappas. Control for societal-scale challenges roadmap 2030. In A. M. Annaswamy, K. H. Johansson, and G. J. Pappas, editors, *IEEE Control Systems Society Publication*. 2023.
- [C25] A. Martin, L. Furieri, F. Dörfler, J. Lygeros, and G. Ferrari-Trecate. Regret optimal control for uncertain stochastic systems. 2023. Submitted.
- [C26] L. Ortmann, G. Hotz, S. Bolognani, and F. Dörfler. Real-time curative actions for power systems via online feedback optimization. In *2023 IEEE Belgrade PowerTech*, 2023.
- [C27] A. Rimoldi, C. Cenedese, A. Padoan, F. Dörfler, and J. Lygeros. Urban traffic congestion control: a deep change. 2023. Submitted.
- [C28] L. Treven, B. Sukhija, J. Hübotter, F. Dörfler, and A. Krause. Efficient exploration in continuous-time model-based reinforcement learning. In *NeurIPS*, 2023. To appear. Available at <https://arxiv.org/abs/2310.19848>.
- [C29] W. Wang, Z. He, G. Belgioioso, S. Bolognani, and F. Dörfler. Decentralized feedback optimization via sensitivity decoupling: Stability and sub-optimality. 2023. Submitted.
- [C30] G. Zardini, N. Lanzetti, G. Belgioioso, C. Hartnik, S. Bolognani, F. Dörfler, and E. Frazzoli. Strategic interactions in multi-modal mobility systems: A game-theoretic perspective. In *IEEE 26th International Conference on Intelligent Transportation Systems*, 2023. To appear. Available at <https://arxiv.org/abs/2308.04820>.
- [C31] J.S. Brouillon, K. Moffat, F. Dörfler, and G. Ferrari-Trecate. Robust online joint state/input/parameter estimation of linear systems. In *Proceedings of the 61th IEEE Conference on Decision and Control*, pages 2153–2158, December 2022.
- [C32] F. Dörfler, P. Tesi, and C. De Persis. On the role of regularization in direct data-driven LQR control. In *Proceedings of the 61st IEEE Conference on Decision and Control*, pages 1091–1098, December 2022.

- [C33] P. Grontas, M.W. Fisher, and F Dörfler. Distributed and constrained H_2 control design via system level synthesis and dual consensus admn. In *Proceedings of the 61st IEEE Conference on Decision and Control*, pages 301–307, December 2022.
- [C34] S. Hall, G. Belgioioso, D. Liao-McPherson, and F. Dörfler. Receding-horizon generalized games for demand-side management. In *Proceedings of the 61st IEEE Conference on Decision and Control*, pages 3795–3800, December 2022.
- [C35] S. Hall, L. Ortmann, M. Picallo, and F. Dörfler. Real-time projected gradient-based nonlinear model predictive control with an application to anesthesia control. In *Proceedings of the 61th IEEE Conference on Decision and Control*, pages 6193–6198, December 2022.
- [C36] N. Lanzetti, J. Hajar, and F. Dörfler. Modeling of political systems using Wasserstein gradient flows. In *Proceedings of the 61st IEEE Conference on Decision and Control*, pages 364–369, December 2022.
- [C37] A. Padoan, J. Coulson, H.J. van Waarde, J. Lygeros, and F. Dörfler. Behavioral uncertainty quantification for data-driven control. In *Proceedings of the 61st IEEE Conference on Decision and Control*, pages 4726–4731, December 2022.
- [C38] A. Tayyebi and F Dörfler. Hybrid angle control and almost global stability of non-synchronous hybrid ac/dc power grids. In *Proceedings of the 61th IEEE Conference on Decision and Control*, pages 7708–7713, December 2022.
- [C39] M. Chen, D. Zhou, A. Tayyebi, E. Prieto, F. Dörfler, and F. Blaabjerg. Augmentation of generalized multivariable grid-forming control for power converters with cascaded controllers. In *International Power Electronics Conference*, pages 998–100, May 2022.
- [C40] A. Zanardi, S. Bolognani, A. Censi, F. Dörfler, and E. Frazzoli. Factorization of dynamic games over spatio-temporal resources. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 13159–13166, February 2022.
- [C41] L. Huang, H. Xin, W. Dong, and F. Dörfler. Impacts of grid structure on PLL-synchronization stability of converter-integrated power systems. In *9th IFAC Conference on Networked Systems NECSYS 2022*, volume 55, pages 264–269, 2022.
- [C42] A. Martin, L. Furieri, F. Dörfler, J. Lygeros, and G. Ferrari-Trecate. Safe control with minimal regret. In *Proceedings of the 4th Annual Learning for Dynamics and Control Conference*, pages 726–738, 2022.
- [C43] A. Terpin, N. Lanzetti, B. Yardim, F Dörfler, and G. Ramponi. Trust region policy optimization with optimal transport discrepancies: Duality and algorithm for continuous actions. In *NeurIPS*, 2022.
- [C44] G. Belgioioso, D. Liao-McPherson, M. Hudoba de Badyn, S. Bolognani, J. Lygeros, and F. Dörfler. Sampled-data online feedback equilibrium seeking: Stability and tracking. In *60th IEEE Conference on Decision and Control (CDC)*, pages 2702–2708, 2021.
- [C45] J.S. Brouillon, E. Fabbiani, P. Nahata, F. Dörfler, and G. Ferrari-Trecate. Bayesian methods for the identification of distribution networks. In *60th IEEE Conference on Decision and Control (CDC)*, pages 3646–3651, 2021.
- [C46] L. Huang, J. Zhen, J. Lygeros, and F. Dörfler. Quadratic regularization of data-enabled predictive control: Theory and application to power converter experiments. In *IFAC Symposium on System Identification SYSID*, volume 7, pages 192–197, 2021.
- [C47] A. Schlaginhausen, P. Wenk, F. Dörfler, and A. Krause. Learning stable deep dynamics models for partially observed or delayed dynamical systems. In *NeurIPS*, volume 34, 2021.
- [C48] A. Terpin, S. Fricker, M. Perez, M. Hudoba de Badyn, and F. Dörfler. Distributed feedback optimisation for robotic coordination. In *American Control Conference*, pages 3710–3715, 2021.

- [C49] L. Treven, P. Wenk, F. Dörfler, and A. Krause. Distributional gradient matching for learning uncertain neural dynamics. In *NeurIPS*, volume 34, 2021.
- [C50] G. Zardini, N. Lanzetti, L. Guerrini, E. Frazzoli, and F. Dörfler. Game theory to study interactions between mobility stakeholders. In *IEEE International Intelligent Transportation Systems Conference (ITSC)*, pages 2054–2061, 2021.
- [C51] P. Carlet, A. Favato, S. Bolognani, and F. Dörfler. Data-driven predictive current control for synchronous motor drives. In *IEEE Energy Conversion Congress and Exposition (ECCE)*, pages 5148–5154, 2020.
- [C52] A. Crivellaro, A. Tayyebi, C. Gavriluta, D. Groß, A. Anta, F. Kupzog, and F. Dörfler. Beyond low-inertia systems: Massive integration of grid-forming power converters in transmission grids. In *PES General Meeting*, 2020.
- [C53] A. Hauswirth, F. Dörfler, and A. Teel. On the robust implementation of projected dynamical systems with anti-windup controllers. In *American Control Conference*, pages 1286–1291, 2020.
- [C54] A. Hauswirth, L. Ortmann, S. Bolognani, and F. Dörfler. Limit behavior and the role of augmentation in projected saddle flows for convex optimization. In *21st IFAC World Congress*, pages 2405–8963, 2020.
- [C55] A. Tayyebi, A. Anta, and F. Dörfler. Almost globally stable hybrid grid-forming angle control. In *IEEE Conference on Decision and Control*, pages 830–835, 2020.
- [C56] J. Coulson, J. Lygeros, and F. Dörfler. Data-enabled predictive control: In the shallows of the DeePC. In *European Control Conference*, pages 307–312, 2019.
- [C57] J. Coulson, J. Lygeros, and F. Dörfler. Regularized and distributionally robust data-enabled predictive control. In *IEEE Conference on Decision and Control*, pages 2696–2701, 2019.
- [C58] F. Dörfler, S. Bolognani, J. W. Simpson-Porco, and S. Grammatico. Distributed control and optimization for autonomous power grids. In *European Control Conference*, pages 2436–2453, 2019.
- [C59] D. Groß and F. Dörfler. Projected grid-forming control for current-limiting of power converters. In *Allerton Conf. on Communications, Control and Computing*, pages 326–333, 2019.
- [C60] L. Huang, J. Coulson, J. Lygeros, and F. Dörfler. Data-enabled predictive control for grid-connected power converters. In *IEEE Conference on Decision and Control*, pages 8130–8135, 2019.
- [C61] T. Jouini, D. Groß, and F. Dörfler. Local synchronization of two DC/AC converters via matching control. In *European Control Conference*, pages 2996–3001, 2019.
- [C62] A. Mešanović, X. Wu, S. Schuler, U. Münz, F. Dörfler, and R. Findeisen. *Optimal Design of Distributed Controllers for Large-Scale Cyber-Physical Systems*, pages 181–210. Springer International Publishing, Cham, 2019.
- [C63] M. Picallo and F. Dörfler. Sieving out unnecessary constraints in scenario optimization with an application to power systems. In *IEEE Conference on Decision and Control*, pages 6100–6105, 2019.
- [C64] B. K. Poolla, J. W. Simpson-Porco, N. Monshizadeh, and F. Dörfler. Quadratic performance analysis of secondary frequency controllers. In *Proceedings of the 55th IEEE Conference on Decision and Control*, pages 7492–7497, 2019.
- [C65] G. Seo, I. Subotic, B. Johnson, M. Colombino, D. Groß, and F. Dörfler. Dispatchable virtual oscillator control for decentralized inverter-dominant power systems – analysis of droop characteristic and verification. In *Applied Power Electronics Conference (APEC)*, pages 561–566, 2019.
- [C66] G. Weiss, F. Dörfler, and Y. Levron. Two stability theorems concerning power networks. In *IEEE Joint 19th International Symposium on Computational Intelligence and Informatics and 7th International Conference on Recent Achievements in Mechatronics, Automation, Computer Sciences and Robotics*, pages 15–20, 2019.

- [C67] S. Menta, A. Hauswirth, S. Bolognani, G Hug, and F. Dörfler. Stability of dynamic feedback optimization with applications to power systems. In *Allerton Conf. on Communications, Control and Computing*, pages 136–143, October 2018.
- [C68] M. Sinha, F. Dörfler, B. Johnson, and S. Dhople. Stabilizing phase-balanced or phase-synchronized trajectories of Liénard oscillators in connected electrical networks. In *Allerton Conf. on Communications, Control and Computing*, October 2018.
- [C69] J. Barreiro-Gomez, F. Dörfler, and H. Tembine. Distributed and robust population games with applications to optimal frequency control in power systems. In *American Control Conference*, pages 5762–5767, Milwaukee, WI, July 2018.
- [C70] F. Milano, F. Dörfler, G Hug, D. Hill, and G. Verbic. Foundations and challenges of low-inertia systems. In *Power Systems Computation Conference (PSCC)*, pages 1–25, Dublin, Ireland, June 2018.
- [C71] M. Sinha, F. Dörfler, B. Johnson, and S. Dhople. Synchronization of Liénard oscillators in heterogeneous electrical networks. In *Proceedings of the 4th Indian Control Conference*, pages 240 – 245, January 2018.
- [C72] C. Arghir and F. Dörfler. Energy-based stabilization of network flows in multi-machine power systems. In *International Symposium on Mathematical Theory of Network and Systems (MTNS)*, pages 933–938, 2018.
- [C73] J.S. Brouillon, M. Colombino, D. Groß, and F. Dörfler. The effect of transmission-line dynamics on a globally synchronizing controller for power inverters. In *European Control Conference*, 2018.
- [C74] Y. Ghaedsharaf, C. Somarakis, F. Dörfler, and N. Motee. Large area control of power networks with time-delay. In *IFAC Workshop on Distributed Estimation and Control in Networked Systems*, 2018.
- [C75] A. Hauswirth, I. Subotic, S. Bolognani, G Hug, and F. Dörfler. Time-varying projected dynamical systems with applications to feedback optimization of power systems. In *Proceedings of the 57th IEEE Conference on Decision and Control*, pages 3258–3263, 2018.
- [C76] C. Somarakis, Y. Ghaedsharaf, F. Dörfler, and N. Motee. Risk of phase incoherence in noisy power networks with delayed feedback control. In *IFAC Workshop on Distributed Estimation and Control in Networked Systems*, 2018.
- [C77] A. Tayyebi, Z. Miletic, F. Dörfler, F. Kupzog, and W. Hribernik. Grid-forming converters – inevitability, control strategies and challenges in future grid applications. In *International Conference on Electricity Distribution (CIRED)*, 2018.
- [C78] E.R.A. Weitenberg, Y. Jiang, C. Zhao, E. Mallada, F. Dörfler, and C. De Persis. Robust decentralized frequency control: A leaky integrator approach. In *European Control Conference*, 2018.
- [C79] M. Colombino, D. Groß, and F. Dörfler. Global phase and voltage synchronization for power inverters: a decentralized consensus-inspired approach. In *Proceedings of the 56th IEEE Conference on Decision and Control*, pages 5690 – 5695, December 2017.
- [C80] S. Curi, D. Groß, and F. Dörfler. Control of low inertia power grids: A model reduction approach. In *Proceedings of the 56th IEEE Conference on Decision and Control*, pages 5708 – 5713, December 2017.
- [C81] M. Sinha, F. Dörfler, B. Johnson, and S. Dhople. Phase balancing in globally connected networks of Liénard oscillators. In *Proceedings of the 56th IEEE Conference on Decision and Control*, pages 595 – 600, December 2017.
- [C82] A. Hauswirth, A. Zanardi, S. Bolognani, F. Dörfler, and G Hug. Online optimization in closed loop on the power flow manifold. In *IEEE PES PowerTech Manchester*, pages 1–6, June 2017.

- [C83] L. Aolaritei, S. Bolognani, and F. Dörfler. A distributed voltage stability margin for power distribution networks. In *IFAC World Congress*, pages 13240–13245, 2017.
- [C84] C. De Persis, E.R.A. Weitenberg, and F. Dörfler. A power consensus algorithm for DC microgrids. In *IFAC World Congress*, pages 10009–10014, 2017.
- [C85] D. Groß, S. Bolognani, B. K. Poolla, and F. Dörfler. Increasing the resilience of low-inertia power systems by virtual inertia and damping. In *Bulk Power Systems Dynamics and Control Symposium (IREP)*, 2017.
- [C86] D. Groß and F. Dörfler. On the steady-state behavior of low-inertia power systems. In *IFAC World Congress*, pages 10735–10741, 2017.
- [C87] P. Nahata, S. Mastellone, and F. Dörfler. A Decentralized Switched System Approach to Overvoltage Prevention in PV Residential Microgrids. In *IFAC World Congress*, pages 6630–6635, 2017.
- [C88] P. Nahata, S. Mastellone, and F. Dörfler. Decentralized Optimal Projected Control of PV Inverters in Residential Microgrids. In *IFAC World Congress*, pages 6624–6629, 2017.
- [C89] B. K. Poolla, D. Groß, T. Borsche, S. Bolognani, and F. Dörfler. Virtual inertia placement in electric power grids. In Jakob Stoustrup, editor, *Energy Markets and Responsive Grids*, pages 281–305, 2017.
- [C90] C. De Persis, N. Monshizadeh, J. Schiffer, and F. Dörfler. A Lyapunov approach to control of microgrids with a network-preserved differential-algebraic model. In *Proceedings of the 55th IEEE Conference on Decision and Control*, pages 2595–2600, December 2016.
- [C91] J. W. Simpson-Porco, B. K. Poolla, N. Monshizadeh, and F. Dörfler. Quadratic performance of primal-dual methods with application to secondary frequency control of power systems. In *Proceedings of the 55th IEEE Conference on Decision and Control*, pages 1840–1845, December 2016.
- [C92] C. Arghir, D. Groß, and F. Dörfler. On the steady-state behavior of a nonlinear power network model. In *6th IFAC Workshop on Distributed Estimation and Control in Networked Systems*, pages 61–66, September 2016.
- [C93] T. Jouini, C. Arghir, and F. Dörfler. Grid-friendly matching of synchronous machines by tapping into the dc storage. In *6th IFAC Workshop on Distributed Estimation and Control in Networked Systems*, pages 192–197, September 2016.
- [C94] F. Kottmann, S. Bolognani, and F. Dörfler. A separation principle for optimal IaaS cloud computing distribution. In *European Signal Processing Conference (EUSIPCO)*, pages 1393–1397, August 2016.
- [C95] F. Dörfler and S. Grammatico. Amidst centralized and distributed frequency control in power systems. In *American Control Conference*, pages 5909–5914, Boston, MA, July 2016.
- [C96] B. Li, G. Sansavini, S. Bolognani, and F. Dörfler. Linear implicit AC PF cascading failure analysis with power system operations and automation. In *IEEE Power & Energy Society General Meeting*, pages 1–5, Boston, MA, July 2016.
- [C97] B. K. Poolla, S. Bolognani, and F. Dörfler. Placing rotational inertia in power grids. In *American Control Conference*, pages 2314–2320, Boston, MA, July 2016.
- [C98] X. Wu, F. Dörfler, and M. R. Jovanovic. Topology identification and design of distributed integral action in power networks. In *American Control Conference*, Boston, MA, July 2016.
- [C99] J. Schiffer and F. Dörfler. On stability of a distributed averaging PI frequency and active power controlled differential-algebraic power system model. In *European Control Conference*, pages 1487–1492, June 2016.
- [C100] S. Bolognani and F. Dörfler. Fast scenario-based decision making in unbalanced distribution networks. In *Power Systems Computation Conference (PSCC)*, pages 1–7, June, 2016.

- [C101] A. Hauswirth, S. Bolognani, G Hug, and F. Dörfler. Projected gradient descent on riemannian manifolds with applications to online power system optimization. In *Allerton Conf. on Communications, Control and Computing*, pages 1–8, 2016.
- [C102] M. Sinha, F. Dörfler, B. Johnson, and S. Dhople. Synchronization of lienard-type oscillators in uniform electrical networks. In *American Control Conference*, 2016.
- [C103] F. Pasqualetti, F. Dörfler, and F. Bullo. A divide-and-conquer approach to distributed attack identification. In *IEEE Conf. on Decision and Control*, pages 5801–5807, Osaka, Japan, December 2015.
- [C104] J. W. Simpson-Porco, F. Dörfler, and F. Bullo. A solvability condition for reactive power flow. In *IEEE Conf. on Decision and Control*, pages 2013–2017, Osaka, Japan, December 2015.
- [C105] M. Todescato, J. W. Simpson-Porco, F. Dörfler, R. Carli, and F. Bullo. Optimal voltage support and stress minimization in power networks. In *IEEE Conf. on Decision and Control*, pages 6921–6926, Osaka, Japan, December 2015.
- [C106] X. Wu, F. Dörfler, and M. R. Jovanovic. Decentralized optimal control of inter-area oscillations in bulk power systems. In *IEEE Conf. on Decision and Control*, pages 5532 – 5537, Osaka, Japan, December 2015.
- [C107] M. Sinha, F. Dörfler, B. Johnson, and S. Dhople. Virtual oscillator control subsumes droop control. In *American Control Conference*, pages 2353–2358, Chicago, IL, July 2015.
- [C108] M. Sinha, B. Johnson, N. Ainsworth, F. Dörfler, and S. Dhople. Nonlinear supersets to droop control. In *IEEE Workshop on Control and Modeling for Power Electronics (COMPEL)*, Vancouver, BC, July 2015.
- [C109] C. Zhao, E. Mallada, and F. Dörfler. Distributed frequency control for stability and economic dispatch in power networks. In *American Control Conference*, pages 2359–2364, Chicago, IL, July 2015.
- [C110] J. Zhao and F. Dörfler. Distributed control, load sharing, and dispatch in DC microgrids. In *American Control Conference*, pages 3304–3309, Chicago, IL, July 2015.
- [C111] S. Bolognani and F. Dörfler. Fast power system analysis via implicit linearization of the power flow manifold. In *Allerton Conf. on Communications, Control and Computing*, 2015.
- [C112] T. Summers, I. Shames, J. Lygeros, and F. Dörfler. Topology design for optimal network coherence. In *European Control Conference*, 2015. Available at <http://arxiv.org/abs/1411.4884>.
- [C113] F. Dörfler, J. W. Simpson-Porco, and F. Bullo. Plug-and-play control and optimization in microgrids. In *IEEE Conf. on Decision and Control*, pages 211–216, Los Angeles, CA, USA, December 2014.
- [C114] X. Wu, F. Dörfler, and M. R. Jovanovic. Analysis and design trade-offs for power network inter-area oscillations. In *International Symposium on Mathematical Theory of Network and Systems (MTNS)*, July 2014.
- [C115] F. Dörfler, S. Dhople, B. Johnson, and A. Hamadeh. Synchronization of nonlinear circuits in dynamic electrical networks. In *European Control Conference*, pages 552–557, Strasbourg, France, June 2014.
- [C116] B. Gentile, J. W. Simpson-Porco, F. Dörfler, S. Zampieri, and F. Bullo. On reactive power flow and voltage stability in microgrids. In *American Control Conference*, pages 759–764, Portland, OR, June 2014.
- [C117] Y. Xiao, F. Dörfler, and M. van der Schaar. Rating and matching in peer review systems. In *Allerton Conf. on Communications, Control and Computing*, pages 54–61, 2014.
- [C118] J. W. Simpson-Porco, F. Dörfler, Q. Shafiee, J. M. Guerrero, and F. Bullo. Stability, power sharing, & distributed secondary control in droop-controlled microgrids. In *IEEE Int. Conf. on Smart Grid Communications*, pages 672–677, Vancouver, BC, Canada, October 2013.

- [C119] F. Dörfler and F. Bullo. Novel Insights into Lossless AC and DC Power Flow. In *IEEE Power & Energy Society General Meeting*, July 2013.
- [C120] D. Romeres, F. Dörfler, and F. Bullo. Novel results on slow coherency in consensus and power networks. In *European Control Conference*, pages 742–747, Zürich, Switzerland, July 2013.
- [C121] F. Dörfler, M. R. Jovanovic, M. Chertkov, and F. Bullo. Sparse and optimal wide-area damping control in power networks. In *American Control Conference*, pages 4295–4300, Washington, DC, USA, June 2013.
- [C122] H. Bouattour, J. W. Simpson-Porco, F. Dörfler, and F. Bullo. Further results on distributed secondary control in microgrids. In *IEEE Conf. on Decision and Control*, pages 1514–1519, March 2013. Extended manuscript available at <http://motion.me.ucsb.edu/pdf/2013j-bsdb.pdf>.
- [C123] J. W. Simpson-Porco, F. Dörfler, and F. Bullo. Voltage stabilization in microgrids via quadratic droop control. In *IEEE Conf. on Decision and Control*, pages 7582–7589, February 2013.
- [C124] F. Dörfler and F. Bullo. Exploring synchronization in complex oscillator networks. In *IEEE Conf. on Decision and Control*, pages 7157–7170, Maui, HI, USA, December 2012.
- [C125] F. Dörfler, M. Chertkov, and F. Bullo. Synchronization assessment in power networks and coupled oscillators. In *IEEE Conf. on Decision and Control*, pages 4998–5003, Maui, HI, USA, December 2012.
- [C126] F. Pasqualetti, F. Dörfler, and F. Bullo. Cyber-physical security via geometric control: Distributed monitoring and malicious attacks. In *IEEE Conf. on Decision and Control*, pages 3418–3425, Maui, HI, USA, December 2012.
- [C127] J. W. Simpson-Porco, F. Dörfler, and F. Bullo. Droop-controlled inverters are Kuramoto oscillators. In *IFAC Workshop on Distributed Estimation and Control in Networked Systems*, pages 264–269, Santa Barbara, CA, USA, September 2012.
- [C128] F. Dörfler and F. Bullo. Topological equivalence of a structure-preserving power network model and a non-uniform Kuramoto model of coupled oscillators. In *IEEE Conf. on Decision and Control and European Control Conference*, pages 7099–7104, Orlando, FL, USA, December 2011.
- [C129] F. Pasqualetti, F. Dörfler, and F. Bullo. Cyber-physical attacks in power networks: Models, fundamental limitations and monitor design. In *IEEE Conf. on Decision and Control and European Control Conference*, pages 2195–2201, Orlando, FL, USA, December 2011.
- [C130] F. Dörfler, F. Pasqualetti, and F. Bullo. Distributed detection of cyber-physical attacks in power networks: A waveform relaxation approach. In *Allerton Conf. on Communications, Control and Computing*, pages 1486–1491, September 2011.
- [C131] F. Dörfler and F. Bullo. On the critical coupling strength for Kuramoto oscillators. In *American Control Conference*, pages 3239–3244, San Francisco, CA, USA, June 2011.
- [C132] F. Dörfler and F. Bullo. Spectral Analysis of Synchronization in a Lossless Structure-Preserving Power Network Model. In *Proceedings of the 1st IEEE Conference on Smart Grid Communications in Gaithersburg, Maryland, USA*, pages 179–184, October 2010.
- [C133] F. Dörfler and F. Bullo. Synchronization of Power Networks: Network Reduction and Effective Resistance. In *Proceedings of the 2nd IFAC Workshop on Distributed Estimation and Control in Networked Systems in Annecy, France*, pages 197–202, September 2010.
- [C134] F. Dörfler and F. Bullo. Synchronization and Transient Stability in Power Networks and Non-Uniform Kuramoto Oscillators. In *Proceedings of the American Control Conference in Baltimore, Maryland, USA*, pages 930–937, June 2010.
- [C135] T. D. Krøvel, F. Dörfler, M. Berger, and J. M. Rieber. High-Precision Spacecraft Attitude and Manoeuvre Control Using Electric Propulsion. In *Proceedings of the 60th International Astronautical Congress in Seoul, Korea*, October 2009.

- [C136] F. Dörfler and B. Francis. Formation control of autonomous robots based on cooperative behavior. In *European Control Conference in Budapest*, pages 2432–2437, Budapest, Hungary, August 2009.
- [C137] J. K. Johnsen, F. Dörfler, and F. Allgöwer. L₂-gain of Port-Hamiltonian systems and application to a biochemical fermenter. In *American Control Conference*, pages 153–158, Seattle, Washinton, USA, June 2008.

Theses

- [T1] F. Dörfler. *Dynamics and Control in Power Grids and Complex Oscillator Networks*. Ph.D. thesis, University of California at Santa Barbara, September 2013.
- [T2] F. Dörfler. *Geometric Analysis of the Formation Problem for Autonomous Robots*. Diploma thesis, University of Toronto, August 2008.
- [T3] F. Dörfler. *Port-Hamiltonian Systems – Stability Analysis and Application in Process Control*. Student thesis, Universität Stuttgart, July 2007.

Doctoral theses under my supervision

- [D1] L. Ortmann. *Online Feedback Optimization for Power Grid Control*. PhD thesis, ETH Zürich, 2023. To appear soon at <https://www.research-collection.ethz.ch>.
- [D2] J. Coulson. *Data-enabled Predictive Control*. PhD thesis, ETH Zürich, 2022.
- [D3] M. Picallo Cruz. *Interconnected Online Feedback Optimization and Estimation Algorithms for Power System Operation in Real Time*. PhD thesis, ETH Zürich, 2022.
- [D4] N. Pagan. *Modeling, Analysis, and Inference in Social Network Formation*. PhD thesis, ETH Zürich, 2021.
- [D5] A. Hauswirth. *Optimization Algorithms as Feedback Controllers for Power System Operations*. PhD thesis, ETH Zürich, 2020.
- [D6] C. Arghir. *Transverse feedback passivation in control of multi-machine and multi-converter power networks*. PhD thesis, ETH Zürich, 2019.
- [D7] B.K. Poola. *System Norm Approaches for Power System Stability Analysis and Control*. PhD thesis, ETH Zürich, 2019.

Patents

- [P1] B. Johnson, N. Ainsworth, S. Dhople, M. Sinha, and F. Dörfler. Virtual Oscillator Control. U.S. 10,528,687 B2, January 7, 2020.
- [P2] B. Johnson, M. Rodriguez, M. Sinha, S. Dhople, and F. Dörfler. Decentralized Oscillator-Based Converter Control. U.S. 10,340,801 B2, July 2, 2019.