

Johanna L. Mathieu

Department of Electrical Engineering and Computer Science
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Education

University of California, Berkeley <i>Ph.D., Mechanical Engineering</i> Advisors: Duncan Callaway & Ashok Gadgil	Berkeley, CA 2012
University of California, Berkeley <i>M.S., Mechanical Engineering</i>	Berkeley, CA 2008
Massachusetts Institute of Technology <i>S.B., Ocean Engineering</i> Minor in Ancient and Medieval Studies	Cambridge, MA 2004

Positions

University of Michigan <i>Associate Professor with Tenure, Electrical Engineering and Computer Science</i> <i>Assistant Professor, Electrical Engineering and Computer Science</i> <i>Faculty Affiliate, Energy Institute</i>	Ann Arbor, MI <i>Sep 2020 - Present</i> <i>Jan 2014 - Aug 2020</i>
ETH Zurich <i>Postdoctoral Researcher, Power Systems Laboratory</i>	Zurich, Switzerland <i>Jul 2012 - Dec 2013</i>
Lawrence Berkeley National Laboratory <i>Affiliate, Environmental Energy Technologies Division</i>	Berkeley, CA <i>Feb 2007 - Aug 2012</i>
Bangladesh University of Engineering and Technology <i>Visiting Researcher, Department of Civil Engineering</i>	Dhaka, Bangladesh <i>May 2008 - Jul 2008</i>
MIT Sea Grant College Program <i>Research Assistant, Center for Coastal Resources</i>	Cambridge, MA <i>Dec 2005 - Jun 2006</i>
U.S. Peace Corps <i>Education Volunteer</i>	Morogoro & Mahiwa, Tanzania <i>Sep 2004 - Oct 2005</i>
Woods Hole Oceanographic Institution <i>Summer Student Fellow, Advanced Engineering Laboratory</i>	Woods Hole, MA <i>Summer 2003</i>
University of Southampton <i>Visiting Researcher, Institute for Sound and Vibration Research</i>	Southampton, United Kingdom <i>January 2003</i>
Massachusetts Institute of Technology <i>Undergraduate Researcher, Deep Sea Archaeology Research Group</i>	Cambridge, MA <i>Fall 2001, Spring 2002, Fall 2002</i>
University of Rhode Island Graduate School of Oceanography <i>Summer Undergraduate Research Fellow in Oceanography</i>	Narragansett, RI <i>Summer 2002</i>

Teaching

UM EECS 460, Control System Analysis & Design <i>Instructor</i>	Ann Arbor, MI <i>Winter 2020</i>
UM EECS 463, Power System Design and Operation <i>Instructor</i>	Ann Arbor, MI <i>Winter 2014; Fall 2015, 2018</i>
UM EECS 498, Grid Integration of Alternative Energy Sources <i>Instructor</i>	Ann Arbor, MI <i>Winter 2015</i>
UM EECS 598, Analysis of Electric Power Distribution Systems and Loads <i>Course Developer & Instructor</i>	Ann Arbor, MI <i>Fall 2014, 2016; Winter 2019</i>
UM EECS 598, Power System Markets & Optimization <i>Course Developer & Instructor</i>	Ann Arbor, MI <i>Fall 2019; Winter 2016, 2018</i>
Short Course: Grid 101 <i>Course Developer (with I. Hiskens) & Instructor</i>	Ann Arbor, MI <i>May 2018</i>
UC Berkeley CE 290, Design for Sustainable Communities <i>Graduate Student Instructor</i>	Berkeley, CA <i>Spring 2009, 2010</i>
Mahiwa Secondary School, Physics & Mathematics <i>U.S. Peace Corps Volunteer & Secondary School Teacher</i>	Mahiwa, Tanzania <i>Jan - Oct 2005</i>
St. Walburg's Hospital Adult Education Program, Physics <i>U.S. Peace Corps Volunteer & Adult Education Teacher</i>	Nyangao, Tanzania <i>Spring 2005</i>

Guest Lectures

- Earth Day at 50 Teach-Out: Reimagining the Future of Sustainability, 2020.
- Technical University of Denmark Center for Electric Power and Energy Summer School, *Data-Driven Distributionally Robust Optimization*, Jun 18, 2019.
- UM ESE 501, *A Brief Introduction to the Grid*, Oct 9, 2019.
- UM ESE 501, *A Brief Introduction to the Grid*, Oct 10, 2018.
- UM EECS 500, *Coordinating Electric Loads to Improve Power System Reliability and Economics*, Oct 16, 2015.
- UM EECS 500, *How Your Refrigerator Can Help Get More Renewable Energy on the Power Grid*, Oct 3, 2014.
- UM CEE 679, *Energy Arbitrage with Thermostatically Controlled Loads*, Feb 24, 2014.
- UC Berkeley ERG 254, *Electric Energy Systems, Demand Response*, Nov 29, 2011.

Awards & Honors

- National Academy of Engineering US Frontiers of Engineering Symposium Presenter, 2021.
- National Academy of Engineering US Frontiers of Engineering Symposium Participant, 2019.
- NSF CAREER Award, 2019.
- Ernest and Bettine Kuh Distinguished Faculty Award, 2018.
- Senior Member of the IEEE, 2018.
- ACEEE Summer Study on Energy Efficiency in Buildings paper selected for a special issue of *Energy Efficiency*, 2018. (with A. Keskar, D. Anderson, J.X. Johnson, and I.A. Hiskens)

- A Best Paper on Distribution Systems, Microgrids, and Renewables, IEEE PES General Meeting, 2018. (with G.S. Ledva and S. Peterson)
- Honorable Mention, INFORMS Junior Faculty Interest Group Paper Competition, 2017. (with B. Li and R. Jiang)
- Energy Policy Research Conference paper selected for a special issue of *The Electricity Journal*, 2017. (with S. Forrester, A. Zaman, and J.X. Johnson)
- IEEE PES PowerTech Conference High Quality Paper Award, 2017. (with M. Yao and D.K. Molzahn)
- Power Systems Computation Conference paper selected for a special issue of the *International Journal of Electrical Power and Energy Systems*, 2014. (with O. Mégel and G. Andersson)
- A Best Paper on Markets, Economics, and Planning, IEEE PES General Meeting, 2014. (with T.B. Rasmussen, M. Sørensen, H. Jóhannsson, and G. Andersson)
- First Prize in Global Poverty Reduction Category, UC Berkeley Bears Breaking Boundaries White Paper Competition, 2007. (with T. Khan, K. Jahani, M. Seflek, and A.J. Gadgil)
- UC Berkeley Chancellor’s Fellowship, 2006.
- National Defense Science and Engineering Graduate Research Fellowship, 2006.
- Honorable Mention, National Science Foundation Graduate Research Fellowship Program, 2006.
- MIT Department of Ocean Engineering Robert Bruce Wallace Prize, 2003.
- Best Undergraduate Paper, Society of Naval Architects and Marine Engineers New England Section Paper Night, 2004. (with M.B. Greytak, K.S. Wasserman, A.K. Baker, J.D. Chambers, and B.M. Mueller)
- Best Undergraduate Paper, Autonomous Undersea Systems Institute Symposium on Unmanned Untethered Submersible Technologies, 2003.
- Best Undergraduate Paper, Society of Naval Architects and Marine Engineers New England Section Paper Night, 2003.
- MIT Sea Grant College Program Dean A. Horn Award, 2003.
- Marine Technology Society Remotely Operated Vehicle Scholarship, 2002.

Publications

- Journal Papers.....
- [J35] S. Lei, **J.L. Mathieu**, and R.K. Jain. “Performance of existing models in baselining short-term load shifting of commercial building HVAC fan power”. In: (review).
 - [J34] M. Yao, I.A. Hiskens, and **J.L. Mathieu**. “Mitigating voltage unbalance using distributed solar photovoltaic inverters”. In: (review).
 - [J33] S.C. Ross and **J.L. Mathieu**. “Strategies for network-safe load control with a third-party aggregator and a distribution operator”. In: (review).
 - [J32] L. Herre, **J.L. Mathieu**, and L. Söder. “Impact of market timing on the profit of a risk-averse load aggregator”. In: *IEEE Transactions on Power Systems* (Accepted).
 - [J31] A. Stuhlmacher and **J.L. Mathieu**. “Chance-constrained water pumping to manage water and power demand uncertainty in distribution networks”. In: *Proceedings of the IEEE (Special Issue on Multi-Energy Systems)* (Accepted).
 - [J30] G.S. Ledva and **J.L. Mathieu**. “Separating feeder demand into components using substation, feeder, and smart meter measurements”. In: *IEEE Transactions on Smart Grid* 11.4 (2020), pp. 3280–3290.
 - [J29] A. Keskar, D. Anderson, J.X. Johnson, I.A. Hiskens, and **J.L. Mathieu**. “Do commercial buildings become less efficient when they provide grid ancillary services?” In: *Energy Efficiency (Special Issue for the 2018 ACEEE Summer Study on Energy Efficiency in Buildings)* 13.3 (2020), pp. 487–501.

- [J28] B. Li, R. Jiang, and **J.L. Mathieu**. “Distributionally robust optimal power flow assuming unimodal distributions with misspecified modes”. In: *IEEE Transactions on Control of Network Systems (Special Issue on Analysis, Control, and Optimization of Energy Networks)* 6.3 (2019), pp. 1223–1234.
- [J27] M. Yao, D.K. Molzahn, and **J.L. Mathieu**. “An optimal power flow approach to improve power system voltage stability using demand response”. In: *IEEE Transactions on Control of Network Systems (Special Issue on Analysis, Control, and Optimization of Energy Networks)* 6.3 (2019), pp. 1015–1025.
- [J26] S.C. Ross, G. Vuylsteke, and **J.L. Mathieu**. “Effects of load-based frequency regulation on distribution network operation”. In: *IEEE Transactions in Power Systems* 34.2 (2019), pp. 1569–1578.
- [J25] M. Vrakopoulou, B. Li, and **J.L. Mathieu**. “Chance constrained reserve scheduling using uncertain controllable loads, Part I: Formulation and scenario-based analysis”. In: *IEEE Transactions on Smart Grid* 10.2 (2019), pp. 1608–1617.
- [J24] B. Li, M. Vrakopoulou, and **J.L. Mathieu**. “Chance constrained reserve scheduling using uncertain controllable loads, Part II: Analytical reformulation”. In: *IEEE Transactions on Smart Grid* 10.2 (2019), pp. 1618–1625.
- [J23] B. Li, R. Jiang, and **J.L. Mathieu**. “Ambiguous risk constraints with moment and unimodality information”. In: *Mathematical Programming* 173.1-2 (2019), pp. 151–192.
- [J22] N.A. Ryan, Y. Lin, N. Mitchell-Ward, **J.L. Mathieu**, and J.X. Johnson. “Use-phase drives lithium ion battery life cycle environmental impacts when used for frequency regulation”. In: *Environmental Science & Technology* 52.17 (2018), pp. 10163–10174.
- [J21] G.S. Ledva, L. Balzano, and **J.L. Mathieu**. “Real-time energy disaggregation of a distribution feeder’s demand using online learning”. In: *IEEE Transactions on Power Systems* 33.5 (2018), pp. 4730–4740.
- [J20] G.S. Ledva, E. Vrettos, S. Mastellone, G. Andersson, and **J.L. Mathieu**. “Managing communication delays and model error in demand response”. In: *IEEE Transactions on Power Systems* 33.2 (2018), pp. 1299–1308.
- [J19] S. Forrester, A. Zaman, **J.L. Mathieu**, and J.X. Johnson. “Policy and market barriers to energy storage providing multiple services”. In: *The Electricity Journal (Special Issue for the Energy Policy Institute’s Seventh Annual Energy Policy Research Conference)* 30.9 (2017), pp. 50–56.
- [J18] P. Fortenbacher, **J.L. Mathieu**, and G. Andersson. “Modeling and optimal operation of distributed battery storage in low voltage grids”. In: *IEEE Transactions on Power Systems* 32.6 (2017), pp. 4340–4350.
- [J17] Y. Lin, **J.L. Mathieu**, J.X. Johnson, I.A. Hiskens, and S. Backhaus. “Explaining inefficiencies in commercial buildings providing power system ancillary services”. In: *Energy and Buildings* 152 (2017), pp. 216–226.
- [J16] O. Mégel, **J.L. Mathieu**, and G. Andersson. “Hybrid stochastic-deterministic multi-period DC optimal power flow”. In: *IEEE Transactions on Power Systems* 32.5 (2017), pp. 3934–3945.
- [J15] Y. Zhang, S. Shen, and **J.L. Mathieu**. “Distributionally robust chance-constrained optimal power flow with uncertain renewables and uncertain reserves provided by loads”. In: *IEEE Transactions on Power Systems* 32.2 (2017), pp. 1378–1388.
- [J14] Y. Lin, P. Barooah, and **J.L. Mathieu**. “Ancillary services through demand scheduling and control of commercial buildings”. In: *IEEE Transactions on Power Systems* 32.1 (2017), pp. 186–197.
- [J13] J.A. Taylor, **J.L. Mathieu**, D.S. Callaway, and K. Poolla. “Price and capacity competition in energy storage markets”. In: *Energy Systems* 8.1 (2017), pp. 169–197.
- [J12] T. Haring, **J.L. Mathieu**, and G. Andersson. “Comparing centralized and decentralized contract design enabling direct load control for reserves”. In: *IEEE Transactions on Power Systems* 31.3 (2016), pp. 2044–2054.

- [J11] Y. Lin, J.X. Johnson, and **J.L. Mathieu**. “Emissions impacts of using energy storage for power system reserves”. In: *Applied Energy* 168 (2016), pp. 444–456.
- [J10] O. Mège, **J.L. Mathieu**, and G. Andersson. “Scheduling distributed energy storage units to provide multiple services under forecast error”. In: *International Journal of Electrical Power and Energy Systems (Special Issue for the 18th Power Systems Computation Conference)* 72 (2015), pp. 48–57.
- [J9] **J.L. Mathieu**, M. Kamgarpour, J. Lygeros, G. Andersson, and D.S. Callaway. “Arbitraging intraday wholesale energy market prices with aggregations of thermostatic loads”. In: *IEEE Transactions on Power Systems* 30.2 (2015), pp. 763–772.
- [J8] **J.L. Mathieu**, M.E.H. Dyson, and D.S. Callaway. “Resource and revenue potential of California residential load participation in ancillary services”. In: *Energy Policy* 80 (2015), pp. 76–87.
- [J7] N.J. Addy, S. Kiliccote, D.S. Callaway, and **J.L. Mathieu**. “How baseline model implementation choices affect demand response assessments”. In: *ASME Journal of Solar Energy Engineering – Including Wind Energy and Building Energy Conservation* 137.2 (2015).
- [J6] J.A. Taylor and **J.L. Mathieu**. “Index policies for demand response”. In: *IEEE Transactions on Power Systems* 29.3 (2014), pp. 1287–1295.
- [J5] **J.L. Mathieu**, S. Koch, and D.S. Callaway. “State estimation and control of electric loads to manage real-time energy imbalance”. In: *IEEE Transactions on Power Systems* 28.1 (2013), pp. 430–440.
- [J4] **J.L. Mathieu**, D.S. Callaway, and S. Kiliccote. “Variability in automated responses of commercial buildings and industrial facilities to dynamic electricity prices”. In: *Energy and Buildings* 43.12 (2011), pp. 3322–3330.
- [J3] **J.L. Mathieu**, P.N. Price, S. Kiliccote, and M.A. Piette. “Quantifying changes in building electricity use, with application to demand response”. In: *IEEE Transactions on Smart Grid* 2.3 (2011), pp. 507–518.
- [J2] **J.L. Mathieu** and J.K. Hedrick. “Transformation of a mismatched nonlinear dynamic system into strict feedback form”. In: *ASME Journal of Dynamical Systems, Measurement, & Control* 133.4 (2011).
- [J1] **J.L. Mathieu**, A.J. Gadgil, S.E.A. Addy, and K. Kowolik. “Arsenic remediation of drinking water using iron-oxide coated coal bottom ash”. In: *Journal of Environmental Science and Health, Part A: Toxic/Hazardous Substances & Environmental Engineering* 45.11 (2010), pp. 1446–1460.

Book Chapters.....

- [B3] **J.L. Mathieu**. “Demand response: Coordination of flexible electric loads”. In: *Encyclopedia of Systems and Control, 2nd Edition*. Ed. by J. Baillieul and T. Samad. London: Springer: London, 2020.
- [B2] G.S. Ledva, Z. Du, L. Balzano, and **J.L. Mathieu**. “Disaggregating load by type from distribution system measurements in real-time”. In: *Energy Markets and Responsive Grids*. Ed. by S. Meyn, T. Samad, I.A. Hiskens, and J. Stoustrup. London: Springer, 2018. Chap. 17, pp. 413–437.
- [B1] J.A. Taylor and **J.L. Mathieu**. “Uncertainty in demand response - identification, estimation, and learning”. In: *Tutorials in Operations Research: The Operations Research Revolution*. Ed. by D. Aleman, A. Thiele, J.C. Smith, and H.J. Greenberg. INFORMS, 2015. Chap. 4, pp. 56–70.

Conference Proceedings (**presenter, *contributed equally).....

- [C82] H. Lee, S. Lei, and **J.L. Mathieu**. “Generation scheduling to limit PM2.5 emissions and dispersion: A study on the Seasonal Management System of South Korea”. In: *review*.
- [C81] A. Keskar, S. Lei, T. Webb, S. Nagy, H. Lee, I.A. Hiskens, **J.L. Mathieu**, and J.X. Johnson. “Stay cool and be flexible: energy-efficient grid services using commercial buildings HVAC systems”. In: *Proceedings of the ACEEE Summer Study on Energy Efficiency in Buildings*. (virtual), Aug. 2020.

- [C80] S.C. Ross and ****J.L. Mathieu**. “A method for ensuring a load aggregator’s power deviations are safe for distribution networks”. In: *Proceedings of the Power Systems Computation Conference (PSCC) and a Special Issue of Electric Power Systems Research*. (virtual), June 2020.
- [C79] ****A. Stuhlmacher** and **J.L. Mathieu**. “Water distribution networks as flexible loads: a chance-constrained programming approach”. In: *Proceedings of the Power Systems Computation Conference (PSCC) and a Special Issue of Electric Power Systems Research*. (virtual), June 2020.
- [C78] ****M. Yao** and **J.L. Mathieu**. “Overcoming the practical challenges of applying Steinmetz circuit design to mitigate voltage unbalance using distributed solar PV”. In: *Proceedings of the Power Systems Computation Conference (PSCC) and a Special Issue of Electric Power Systems Research*. (virtual), June 2020.
- [C77] ****S. Lei**, D. Hong, **J.L. Mathieu**, and I.A. Hiskens. “Baseline estimation of commercial building HVAC fan power using tensor decomposition”. In: *Proceedings of the Power Systems Computation Conference (PSCC) and a Special Issue of Electric Power Systems Research*. (virtual), June 2020.
- [C76] ****D. Hong**, S. Lei, **J.L. Mathieu**, and L. Balzano. “Exploration of tensor decomposition applied to commercial building baseline estimation”. In: *Proceedings of the IEEE Global Conference on Signal and Information Processing (GlobalSIP)*. Ottawa, Canada, Nov. 2019.
- [C75] ****A. Stuhlmacher** and **J.L. Mathieu**. “Chance-constrained water pumping managing power distribution network constraints”. In: *Proceedings of the North American Power Symposium (NAPS)*. Wichita, KS, Oct. 2019.
- [C74] N. Farquhar and ****J.L. Mathieu**. “Demand response potential of residential thermostatically controlled loads in Michigan”. In: *Proceedings of the IEEE Power & Energy Society General Meeting*. Atlanta, GA, Aug. 2019.
- [C73] ****S.C. Ross**, P. Nilsson, N. Ozay, and **J.L. Mathieu**. “Managing voltage excursions on the distribution network by limiting the aggregate variability of thermostatic loads”. In: *Proceedings of the American Control Conference (ACC)*. Philadelphia, PA, July 2019, (Invited).
- [C72] ****S.C. Ross**, N. Ozay, and **J.L. Mathieu**. “Coordination between an aggregator and distribution operator to achieve network-aware load control”. In: *Proceedings of the IEEE Power & Energy Society PowerTech Conference*. Milan, Italy, June 2019.
- [C71] ****M. Yao**, I.A. Hiskens, and **J.L. Mathieu**. “Applying Steinmetz circuit design to mitigate unbalance using distributed solar PV”. In: *Proceedings of the IEEE Power & Energy Society PowerTech Conference*. Milan, Italy, June 2019.
- [C70] A. Kern, J.X. Johnson, and ****J.L. Mathieu**. “Environmental impacts of using energy storage aggregations to provide multiple services”. In: *Proceedings of the Hawaii International Conference on Systems Science (HICSS)*. Wailea, Maui, HI, Jan. 2019.
- [C69] ****M. Yao**, I.A. Hiskens, and **J.L. Mathieu**. “Improving power system voltage stability by using demand response to maximize the distance to the closest saddle-node bifurcation”. In: *Proceedings of the IEEE Conference on Decision and Control*. Miami, FL, Dec. 2018.
- [C68] ****G.S. Ledva**, L. Balzano, and **J.L. Mathieu**. “Exploring connections between a multiple model Kalman filter and dynamic fixed share with applications to demand response”. In: *Proceedings of the IEEE Conference on Control Technology and Applications*. Copenhagen, Denmark, Aug. 2018.
- [C67] ****A. Keskar**, D. Anderson, J.X. Johnson, I.A. Hiskens, and **J.L. Mathieu**. “Experimental investigation of the additional energy consumed by building HVAC systems providing grid ancillary services”. In: *Proceedings of the ACEEE Summer Study on Energy Efficiency in Buildings*. Pacific Grove, CA, Aug. 2018, (Updated version in a special issue of *Energy Efficiency*).

- [C66] **G.S. Ledva, S. Peterson, and **J.L. Mathieu**. “Benchmarking of aggregate residential load models used for demand response”. In: *Proceedings of the IEEE Power & Energy Society General Meeting*. Portland, OR, Aug. 2018, (A best conference paper on “Distribution Systems, Microgrids, and Renewables”, Also a poster).
- [C65] B. Li, R. Jiang, and ****J.L. Mathieu**. “Distributionally robust chance-constrained optimal power flow assuming log-concave distributions”. In: *Proceedings of the Power Systems Computation Conference (PSCC)*. Dublin, Ireland, June 2018.
- [C64] **L. Herre, L. Söder, and **J.L. Mathieu**. “The flexibility of thermostatically controlled loads a function of price notice time”. In: *Proceedings of the Power Systems Computation Conference (PSCC)*. Dublin, Ireland, June 2018.
- [C63] M. Yao, D.K. Molzahn, and ****J.L. Mathieu**. “The impact of load models in an algorithm for improving voltage stability via demand response”. In: *Proceedings of the Allerton Conference on Communication, Control, and Computing*. Monticello, IL, Oct. 2017, (Invited).
- [C62] **S. Forrester, **A. Zaman, **J.L. Mathieu**, and J.X. Johnson. “Policy and market barriers to energy storage providing multiple services”. In: *Proceedings of the Energy Policy Institute’s 2017 Energy Policy Research Conference*. Park City, UT, Sept. 2017, (Updated version in a special issue of *The Electricity Journal*).
- [C61] *K. Koorehdavoudi, *M. Yao, **J.L. Mathieu**, and **S. Roy. “Using demand response to shape the fast dynamics of the bulk power network”. In: *Proceedings of the IREP Symposium on Bulk Power System Dynamics and Control*. Espinho, Portugal, Aug. 2017.
- [C60] **M.S. Nazir, S.C. Ross, **J.L. Mathieu**, and I.A. Hiskens. “Performance limits of thermostatically controlled loads under probabilistic switching”. In: *Proceedings of the IFAC World Congress*. Toulouse, France, July 2017.
- [C59] **M. Yao, **J.L. Mathieu**, and D.K. Molzahn. “Using demand response to improve power system voltage stability margins”. In: *Proceedings of the IEEE Power & Energy Society PowerTech Conference*. Manchester, UK, June 2017, (High quality paper award).
- [C58] **S.C. Ross, G. Vuylsteke, and **J.L. Mathieu**. “Effects of load control for real-time energy balancing on distribution network constraints”. In: *Proceedings of the IEEE Power & Energy Society PowerTech Conference*. Manchester, UK, June 2017, (Poster presentation).
- [C57] Y. Zhang, S. Shen, **B. Li, and **J.L. Mathieu**. “Two-stage distributionally robust optimal power flow with flexible loads”. In: *Proceedings of the IEEE Power & Energy Society PowerTech Conference*. Manchester, UK, June 2017, (Poster presentation).
- [C56] J. Chang, **S. Maroukis, F. Pinto, A. Zeynu, **J.L. Mathieu**, and S. Shen. “An interactive game introducing power flow optimization concepts”. In: *Proceedings of the ASEE Annual Conference and Exposition*. Columbus, OH, June 2017.
- [C55] **G.S. Ledva and **J.L. Mathieu**. “A linear approach to manage input delays while supplying frequency regulation using residential loads”. In: *Proceedings of the American Control Conference (ACC)*. Seattle, WA, May 2017, (Invited).
- [C54] **S. Afshari, J. Wolfe, M.S. Nazir, I.A. Hiskens, J.X. Johnson, **J.L. Mathieu**, Y. Lin, A.K. Barnes, D.A. Geller, and S.N. Backhaus. “An experimental study of energy consumption in buildings providing ancillary services”. In: *Proceedings of the IEEE Conference on Innovative Smart Grid Technologies (ISGT), USA*. Arlington, VA, Apr. 2017.
- [C53] **B. Li, R. Jiang, and **J.L. Mathieu**. “Distributionally robust risk-constrained optimal power flow using moment and unimodality information”. In: *Proceedings of the IEEE Conference on Decision and Control (CDC)*. Las Vegas, NV, Dec. 2016.

- [C52] **B. Li, S. Maroukis, Y. Lin, and **J.L. Mathieu**. “Impact of uncertainty from load-based reserves and renewables on dispatch costs and emissions”. In: *Proceedings of the North American Power Symposium (NAPS)*. Denver, CO, Sept. 2016.
- [C51] Y. Lin, ****J.L. Mathieu**, J.X. Johnson, I.A. Hiskens, and S. Backhaus. “Explaining inefficiencies in buildings providing ancillary services”. In: *Proceedings of the ACEEE Summer Study on Energy Efficiency in Buildings*. Pacific Grove, CA, Aug. 2016.
- [C50] **S. Crocker and **J.L. Mathieu**. “Adaptive state estimation and control of thermostatic loads for real-time energy balancing”. In: *Proceedings of the American Control Conference (ACC)*. Boston, MA, July 2016, (Invited, ASME Energy Systems Best Paper Competition Finalist).
- [C49] J.A. Taylor and ****J.L. Mathieu**. “Strategic bidding in electricity markets with only renewables”. In: *Proceedings of the American Control Conference (ACC)*. Boston, MA, July 2016, (Invited).
- [C48] **O. Mège, G. Andersson, and **J.L. Mathieu**. “Reducing the computational effort of stochastic multi-period DC optimal power flow with storage”. In: *Proceedings of the Power Systems Computation Conference (PSCC)*. Genoa, Italy, June 2016.
- [C47] ****J.L. Mathieu** and J.A. Taylor. “Controlling nonlinear batteries for power systems: trading off performance and battery life”. In: *Proceedings of the Power Systems Computation Conference (PSCC)*. Genoa, Italy, June 2016.
- [C46] **Y. Lin, **J.L. Mathieu**, and J.X. Johnson. “Stochastic optimal power flow formulation to achieve emissions objectives with energy storage”. In: *Proceedings of the Power Systems Computation Conference (PSCC)*. Genoa, Italy, June 2016.
- [C45] J. Liu, G. Martinez, B. Li, **J.L. Mathieu**, and **C.L. Anderson. “Comparing robust and probabilistic reliability for systems with renewables and responsive demand”. In: *Proceedings of the Hawaii International Conference on Systems Science (HICSS)*. Koloa, Kauai, HI, Jan. 2016.
- [C44] **C. Zhong and **J.L. Mathieu**. “Relation between overheating of distribution transformers and switching frequency of electric loads used for demand response”. In: *Proceedings of the North American Power Symposium (NAPS)*. Charlotte, NC, Oct. 2015.
- [C43] **G. Vuylsteke, **J.L. Mathieu**, and P.D. Howe. “Environmental and economic benefits of non-disruptive demand response as a function of consumer information sharing”. In: *Proceedings of the North American Power Symposium (NAPS)*. Charlotte, NC, Oct. 2015.
- [C42] G.S. Ledva, L. Balzano, and ****J.L. Mathieu**. “Inferring the behavior of distributed energy resources with online learning”. In: *Proceedings of the Allerton Conference on Communication, Control, and Computing*. Monticello, IL, Oct. 2015, (Invited).
- [C41] G. Martinez, J. Liu, B. Li, **J.L. Mathieu**, and **C.L. Anderson. “Enabling renewable resource integration: The balance between robustness and flexibility”. In: *Proceedings of the Allerton Conference on Communication, Control, and Computing*. Monticello, IL, Oct. 2015, (Invited).
- [C40] Y. Zhang, S. Shen, and ****J.L. Mathieu**. “Data-driven optimization approaches for optimal power flow with uncertain reserves from load control”. In: *Proceedings of the American Control Conference (ACC)*. Chicago, IL, July 2015, (Invited).
- [C39] **Y. Lin, P. Barooah, and **J.L. Mathieu**. “Ancillary services to the grid from commercial buildings through demand scheduling and control”. In: *Proceedings of the American Control Conference (ACC)*. Chicago, IL, July 2015, (Invited).
- [C38] **B. Li and **J.L. Mathieu**. “Analytical reformulation of chance-constrained optimal power flow with uncertain load control”. In: *Proceedings of the IEEE Power & Energy Society PowerTech Conference*. Eindhoven, Netherlands, June 2015.

- [C37] **P. Fortenbacher, **J.L. Mathieu**, and G. Andersson. “Optimal real-time control of multiple battery sets for power system applications”. In: *Proceedings of the IEEE Power & Energy Society PowerTech Conference*. Eindhoven, Netherlands, June 2015.
- [C36] **O. Mégel, **J.L. Mathieu**, and G. Andersson. “Stochastic dual dynamic programming to schedule energy storage units providing multiple services”. In: *Proceedings of the IEEE Power & Energy Society PowerTech Conference*. Eindhoven, Netherlands, June 2015.
- [C35] **G.S. Ledva, E. Vrettos, S. Mastellone, G. Andersson, and **J.L. Mathieu**. “Applying networked estimation and control algorithms to address communication bandwidth limitations and latencies in demand response”. In: *Proceedings of the Hawaii International Conference on Systems Science (HICSS)*. Koloa, Kauai, HI, Jan. 2015.
- [C34] Q. Wang, **M. Liu, and **J.L. Mathieu**. “Adaptive demand response: Online learning of restless and controlled bandits”. In: *Proceedings of the IEEE International Conference on Smart Grid Communications (SmartGridComm)*. Venice, Italy, Nov. 2014.
- [C33] **E. Vrettos, **J.L. Mathieu**, and G. Andersson. “Control of thermostatic loads using moving horizon estimation of individual load states”. In: *Proceedings of the Power Systems Computation Conference (PSCC)*. Wroclaw, Poland, Aug. 2014.
- [C32] **O. Mégel, **J.L. Mathieu**, and G. Andersson. “Scheduling distributed energy storage units to provide multiple services”. In: *Proceedings of the Power Systems Computation Conference (PSCC)*. Wroclaw, Poland, Aug. 2014, (Updated version in a special issue of the *International Journal of Electrical Power and Energy Systems*).
- [C31] **P. Fortenbacher, **J.L. Mathieu**, and G. Andersson. “Modeling, identification, and optimal control of batteries for power system applications”. In: *Proceedings of the Power Systems Computation Conference (PSCC)*. Wroclaw, Poland, Aug. 2014.
- [C30] ****J.L. Mathieu**, T.B. Rasmussen, M. Sørensen, H. Jóhannsson, and G. Andersson. “Technical resource potential of non-disruptive residential demand response in Denmark”. In: *Proceedings of the IEEE Power & Energy Society General Meeting*. National Harbor, MD, July 2014, (A best conference paper on “Markets, Economics, and Planning”, Also a poster).
- [C29] **E. Vrettos, **J.L. Mathieu**, and G. Andersson. “Demand response with moving horizon estimation of individual thermostatic load states from aggregate power measurements”. In: *Proceedings of the American Control Conference (ACC)*. Portland, OR, June 2014.
- [C28] **M. Vrakopoulou, **J.L. Mathieu**, and G. Andersson. “Stochastic optimal power flow with uncertain reserves from demand response”. In: *Proceedings of the Hawaii International Conference on Systems Science (HICSS)*. Waikoloa, Hawaii, HI, Jan. 2014.
- [C27] **J. Liu, S. Li, W. Zhang, **J.L. Mathieu**, and G. Rizzoni. “Planning and control of electric vehicles using dynamic energy capacity models”. In: *Proceedings of the IEEE Conference on Decision and Control (CDC)*. Florence, Italy, Dec. 2013.
- [C26] **J.A. Taylor and **J.L. Mathieu**. “Index policies for demand response under uncertainty”. In: *Proceedings of the IEEE Conference on Decision and Control (CDC)*. Florence, Italy, Dec. 2013, (Invited).
- [C25] N.J. Addy, **J.L. Mathieu**, **S. Kiliccote, and D.S. Callaway. “Understanding the effect of baseline modeling implementation choices on analysis of demand response performance”. In: *Proceedings of the ASME International Mechanical Engineering Congress & Exposition (IMECE)*. LBNL-5560E. San Diego, CA, Nov. 2013.
- [C24] ****J.L. Mathieu**, M. González Vayá, and G. Andersson. “Uncertainty in the flexibility of aggregations of demand response resources”. In: *Proceedings of the IEEE Industrial Electronics Society Conference (IECON)*. Vienna, Austria, Nov. 2013, (Invited).

- [C23] **O. Mégel, **J.L. Mathieu**, and G. Andersson. “Maximizing the potential of energy storage for fast frequency control”. In: *Proceedings of the IEEE Conference on Innovative Smart Grid Technologies (ISGT), Europe*. Copenhagen, Denmark, Oct. 2013.
- [C22] **M. Vrakopoulou, S. Chatzivasileiadis, E. Iggland, M. Imhof, T. Krause, O. Mäkelä, **J.L. Mathieu**, L. Roald, R. Wiget, and G. Andersson. “A unified analysis of security-constrained OPF formulations considering uncertainty, risk, and controllability in single and multi-area systems”. In: *Proceedings of the IREP Symposium on Bulk Power System Dynamics and Control*. Rethymnon, Greece, Aug. 2013.
- [C21] **M. Kamgarpour, C. Ellen, S. Esmaeil Zadeh Soudjani, S. Gerwinn, **J.L. Mathieu**, N. Müller, A. Abate, D.S. Callaway, M. Franzle, and J. Lygeros. “Modeling options for demand side participation of thermostatically controlled loads”. In: *Proceedings of the IREP Symposium on Bulk Power System Dynamics and Control*. Rethymnon, Greece, Aug. 2013.
- [C20] **F. Oldewurtel, T. Borsche, M. Bucher, P. Fortenbacher, M. González Vayá, T. Haring, **J.L. Mathieu**, O. Mégel, E. Vrettos, and G. Andersson. “A framework for and assessment of demand response and energy storage in power systems”. In: *Proceedings of the IREP Symposium on Bulk Power System Dynamics and Control*. Rethymnon, Greece, Aug. 2013.
- [C19] ****J.L. Mathieu**, M. Kamgarpour, J. Lygeros, and D.S. Callaway. “Energy arbitrage with thermostatically controlled loads”. In: *Proceedings of the European Control Conference (ECC)*. Zürich, Switzerland, July 2013, (Invited).
- [C18] ****J.L. Mathieu**, T. Haring, J. Ledyard, and G. Andersson. “Residential demand response program design: engineering and economic perspectives”. In: *Proceedings of the European Energy Markets (EEM) Conference*. Stockholm, Sweden, May 2013.
- [C17] **T. Haring, **J.L. Mathieu**, and G. Andersson. “Decentralized contract design for demand response”. In: *Proceedings of the European Energy Markets (EEM) Conference*. Stockholm, Sweden, May 2013.
- [C16] **J.A. Taylor, **J.L. Mathieu**, D.S. Callaway, and K. Poolla. “Price and capacity competition in zero-mean storage and demand response markets”. In: *Proceedings of the Allerton Conference on Communication, Control, and Computing*. Monticello, IL, Oct. 2012, (Invited).
- [C15] ****J.L. Mathieu**, **M.E.H. Dyson, and D.S. Callaway. “Using residential electric loads for fast demand response: The potential resource and revenues, the costs, and policy recommendations”. In: *Proceedings of the ACEEE Summer Study on Energy Efficiency in Buildings*. Pacific Grove, CA, Aug. 2012.
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- [C13] ****J.L. Mathieu**, D.S. Callaway, and S. Kiliccote. “Examining uncertainty in demand response baseline models and variability in automated responses to dynamic pricing”. In: *Proceedings of the IEEE Conference on Decision and Control and European Control Conference (CDC-ECC)*. LBNL-5096E. Orlando, FL, Dec. 2011, (Invited).
- [C12] **S. Koch, **J.L. Mathieu**, and D.S. Callaway. “Modeling and control of aggregated heterogeneous thermostatically controlled loads for ancillary services”. In: *Proceedings of the Power Systems Computation Conference (PSCC)*. Stockholm, Sweden, Aug. 2011.
- [C11] **P.N. Price, **J.L. Mathieu**, S. Kiliccote, and M.A. Piette. “Using whole-building electric load data in continuous or retro-commissioning”. In: *Proceedings of the National Conference on Building Commissioning*. Cincinnati, OH, Aug. 2011.
- [C10] **G. Ghatikar, **J.L. Mathieu**, M.A. Piette, and S. Kiliccote. “Open automated demand response technologies for dynamic pricing and smart grid”. In: *Proceedings of the Grid Interop Forum*. LBNL-4028E. Chicago, IL, Dec. 2010.

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- [C7] **J.L. Mathieu, A.J. Gadgil, D.S. Callaway, P.N. Price, and S. Kiliccote. “Characterizing the response of commercial and industrial facilities to dynamic pricing signals from the utility”. In: *Proceedings of the ASME International Conference on Energy Sustainability*. LBNL-3682E. Phoenix, AZ, May 2010.
- [C6] J.L. Mathieu, **A.J. Gadgil, K. Kowolik, S. Qazi, and A.M. Agogino. “Design strategies and preliminary prototype for a low-cost arsenic removal system for rural Bangladesh”. In: *Proceedings of the WEDC Conference on Water, Sanitation, and Hygiene: Sustainable Development and Multisectoral Approaches*. LBNL-2696E. Addis Ababa, Ethiopia, May 2009.
- [C5] **J.L. Mathieu, A. Gadgil, K. Kowolik, and S.E.A. Addy. “Removing arsenic from contaminated drinking water in rural Bangladesh: Recent fieldwork results and policy implications”. In: *Proceedings of the UNC Environmental Symposium on Safe Drinking Water: Where Science Meets Policy*. LBNL-2717E. Chapel Hill, NC, Nov. 2008.
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- [C3] **K.S. Wasserman, J.L. Mathieu, M.I. Wolf, A. Hathi, S.E. Fried, and A.K. Baker. “Dynamic buoyancy control of an ROV using a variable ballast tank”. In: *Proceedings of the Marine Technology Society/IEEE OCEANs conference*. Vol. 5. San Diego, CA, Sept. 2003, SP2888–SP2893, (Also a poster).
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Technical Reports, White Papers, and Discussion Papers.

- [R12] S. Lei, J.L. Mathieu, and R. Jain. *Performance of existing baseline models in quantifying the effects of short-term load shifting of campus buildings*. Tech. rep. SLAC-R-1131. SLAC National Accelerator Laboratory, Sept. 2019.
- [R11] P.D. Howe and J.L. Mathieu. *Age and perceived benefits are associated with willingness to participate in an electric load control program*. SocArXiv Paper. doi:10.31235/osf.io/rpg46, July 2018.
- [R10] M. Vrakopoulou, S. Chatzivasileiadis, E. Iggland, M. Imhof, T. Krause, O. Mäkelä, J.L. Mathieu, L. Roald, R. Wiget, and G. Andersson. *Closure of “A unified analysis of security-constrained OPF formulations considering uncertainty, risk, and controllability in single and multi-area systems”*. Prepared Discussion. IREP Symposium on Bulk Power System Dynamics and Control, Rethymnon, Greece, Sept. 2013.
- [R9] D.S. Callaway, J.L. Mathieu, M.E.H. Dyson, M. Kamgarpour, S. Koch, and J. Lygeros. *Mitigating renewables intermittency through non-disruptive distributed load control*. Technical Report. PSERC Industry-University Meeting on Preparing for the Future Grid, Madison, WI, May 2013.

- [R8] **J.L. Mathieu**, T. Haring, and G. Andersson. *Harnessing residential loads for demand response: engineering and economic considerations*. White Paper. Interdisciplinary Workshop on Smart Grid Design and Implementation, Gainesville, FL, Dec. 2012.
- [R7] **J.L. Mathieu** and D.S. Callaway. *The value of real-time data in controlling electric loads for demand response*. White Paper. Carnegie Mellon University Conference on the Electricity Industry: Data Driven Sustainable Energy Systems, Pittsburgh, PA, Mar. 2012.
- [R6] S. Oren, D. Callaway, **J.L. Mathieu**, A. Papavasiliou, T. Mount, M. Zhang, R. Thomas, G. Gross, and A. Dominguez-Garcia. *Renewable energy integration and the impact of carbon regulation on the electric grid*. White Paper. PSERC Future Grid Initiative, 2012.
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- [T2] **J.L. Mathieu**. “Modeling, analysis, and control of demand response resources”. PhD thesis. University of California, Berkeley (LBNL-5544E), May 2012.
- [T1] **J.L. Mathieu**. “Design of a rural water provision system to decrease arsenic exposure in Bangladesh”. MS project report. University of California, Berkeley (LBNL-1422E), Dec. 2008.

Abstracts with Oral Presentations (**presenter).....

- [A23] A. Keskar, D. Anderson, **J.X. Johnson, I.A. Hiskens, and **J.L. Mathieu**. *Buildings as batteries: An experimental investigation into energy efficiency impacts of demand response*. International Symposium on Sustainable Systems and Technology, Portland, OR. June 2019.
- [A22] **A. Keskar, D. Anderson, J.X. Johnson, I.A. Hiskens, and **J.L. Mathieu**. *Buildings as batteries: An experimental investigation into energy efficiency impacts of demand response*. Engineering Sustainability Conference, Pittsburgh, PA. Apr. 2019.
- [A21] ****J.L. Mathieu** and S.C. Ross. *Distribution network-aware load coordination architectures and control strategies*. Conference on Information Sciences and Systems, Baltimore, MD. Mar. 2019.
- [A20] **B. Li, R. Jiang, and **J.L. Mathieu**. *Distributionally robust chance-constrained optimal power flow assuming log-concave distributions*. INFORMS, Phoenix, AZ. Nov. 2018.
- [A19] **S.C. Ross and **J.L. Mathieu**. *Stability of electrical grids with 100% renewable generation*. Michigan University-Wide Sustainability & Environment Conference, Ann Arbor, MI. Feb. 2018.
- [A18] **D.K. Molzahn, M. Yao, and **J.L. Mathieu**. *A multi-period OPF approach to improve voltage stability using demand response*. INFORMS, Houston, TX. Oct. 2017.

- [A17] B. Li, **R. Jiang, and **J.L. Mathieu**. *Ambiguous risk constraints with moment and unimodality information*. INFORMS, Houston, TX. Oct. 2017.
- [A16] ****J.L. Mathieu** and J. Taylor. *Reducing degradation in batteries used for frequency regulation via nonlinear control*. INFORMS, Houston, TX. Oct. 2017, Invited.
- [A15] **D.K. Molzahn, M. Yao, and **J.L. Mathieu**. *A multi-period optimal power flow approach to improve power system voltage stability using demand response*. FERC Technical Conference on Increasing Real-Time and Day-Ahead Market Efficiency through Improved Software, Washington, DC. June 2017.
- [A14] **N. Ryan, Y. Lin, N. Mitchell-Ward, **J.L. Mathieu**, and J.X. Johnson. *Life cycle environmental impacts of using lithium ion batteries for power system reserves and strategies for mitigation*. International Society for Industrial Ecology and International Symposium on Sustainable Systems and Technology Joint Conference, Chicago, IL. June 2017.
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- [A11] **B. Li, R. Jiang, and **J.L. Mathieu**. *Distributionally robust risk-constrained optimal power flow using moment and unimodality information*. INFORMS, Nashville, TN. Nov. 2016, Invited.
- [A10] Y. Lin, N. Mitchell-Ward, **J.L. Mathieu**, and **J.X. Johnson. *Examining life cycle environmental impacts of energy storage for power system reserves*. INFORMS, Nashville, TN. Nov. 2016, Invited.
- [A9] Y. Lin, **J.L. Mathieu**, **N. Mitchell-Ward, and J. Johnson. *Examining life cycle environmental impacts of energy storage for power system reserves*. International Symposium on Sustainable Systems and Technology, Phoenix, AZ. May 2016.
- [A8] **J. Taylor and **J.L. Mathieu**. *Strategic price bidding in electricity markets with only renewables*. INFORMS, Philadelphia, PA. Nov. 2015, Invited.
- [A7] ****J.L. Mathieu**, O. Mgel, and G. Andersson. *Scheduling energy storage resources to provide multiple services*. INFORMS, Philadelphia, PA. Nov. 2015, Invited.
- [A6] ****J.L. Mathieu**, Y. Zhang, S. Shen, and B. Li. *Chance-constrained optimal power flow with uncertain reserves*. INFORMS, Philadelphia, PA. Nov. 2015, Invited.
- [A5] ****J.L. Mathieu**, S. Shen, Y. Zhang, and B. Li. *Data-driven optimization approaches for optimal power flow with uncertain reserves from load control*. FERC Technical Conference on Increasing Real-Time and Day-Ahead Market Efficiency through Improved Software, Washington, DC. June 2015.
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- [A3] ****J.L. Mathieu** and E. Vrettos and G. Andersson. *Control of thermostatic loads using moving horizon estimation of individual load states*. Midwest Workshop on Control and Game Theory, Columbus, OH. Apr. 2014.
- [A2] ****J.L. Mathieu**, M.E.H. Dyson, and D.S. Callaway. *Using residential loads like grid-scale batteries: The resource, potential revenues, and costs*. Los Alamos National Laboratory Conference on Optimization and Control for Smart Grids, Santa Fe, NM. May 2012.
- [A1] ****J.L. Mathieu** and D.S. Callaway. *Using residential electric loads in energy and ancillary services markets*. Trans-Atlantic INFRADAY Conference on Applied Infrastructure Modeling and Policy Analysis, Pre-conference Event at FERC, Washington, DC. Nov. 2011.

Posters (**denotes presenter).....

- [P28] N. Ozay and ****J.L. Mathieu**. *Scalable and safe control synthesis for systems with symmetries*. NSF CPS PI Meeting, Arlington, VA. Nov. 2019.
- [P27] ****B. Hicks**, H. Lee, S. Lei, and **J.L. Mathieu**. *Alternative technique in the approximation of comparative baselines for the energy efficiency evaluation of HVAC systems during demand response events*. UM Summer Research Opportunities Program Symposium, Ann Arbor, MI. July 2019.
- [P26] ****C. Bertcher**, A. Stuhlmacher, and **J.L. Mathieu**. *UM bus electrification: Challenges and solutions*. University of Michigan Undergraduate Research Symposium, Ann Arbor, MI. Apr. 2019.
- [P25] ****A. Stuhlmacher** and **J.L. Mathieu**. *Stochastic water distribution network operation considering power distribution network constraints*. UM Engineering Graduate Symposium, Ann Arbor, MI. Nov. 2018.
- [P24] ****S.C. Ross**, G. Vuylsteke, and **J.L. Mathieu**. *Effects of load-based frequency regulation on distribution network operation*. University of Vermont Future of Energy Workshop, Burlington, VT. Sept. 2018. (Best poster award).
- [P23] ****B. Li**, R. Bent, H. Nagarajan, R. Jiang, and **J.L. Mathieu**. *Decomposition and cutting-plane based algorithm for stochastic climate adaptation problem using special ordered sets*. Los Alamos National Laboratory Student Symposium, Los Alamos, NM. July 2018. (Outstanding poster award - computing).
- [P22] ****A. Keskar**, S. Afshari, P. Giessner, D. Anderson, I. Hiskens, J.X. Johnson, and **J.L. Mathieu**. *Using University of Michigan buildings as batteries*. Michigan University-Wide Sustainability & Environment Conference, Ann Arbor, MI. Feb. 2018.
- [P21] ****M. Yao**, D.K. Molzahn, and **J.L. Mathieu**. *The impact of load models in an algorithm for improving voltage stability via demand response*. UM Engineering Graduate Symposium, Ann Arbor, MI. Nov. 2017.
- [P20] ****A. Kern**, O. Mégel, J.X. Johnson, and **J.L. Mathieu**. *Approximation methods for scheduling battery energy storage for multiple services*. UM Engineering Graduate Symposium, Ann Arbor, MI. Nov. 2017.
- [P19] ****A. Stuhlmacher**, **J.L. Mathieu**, and V. Gupta. *Water-power distribution network coupling for optimal pumping to reduce energy costs and promote resilience*. UM Engineering Graduate Symposium, Ann Arbor, MI. Nov. 2017.
- [P18] ****A. Keskar**, S. Afshari, I. Hiskens, J.X. Johnson, and **J.L. Mathieu**. *Quantifying energy efficiencies of buildings providing ancillary services*. UM Engineering Graduate Symposium, Ann Arbor, MI. Nov. 2017.
- [P17] ****S.C. Ross**, G. Vuylsteke, and **J.L. Mathieu**. *Impacts on the local power network when residential loads provide energy balancing services to the regional network*. UM Engineering Graduate Symposium, Ann Arbor, MI. Nov. 2017.
- [P16] ****A. Keskar**, S. Afshari, I. Hiskens, J.X. Johnson, and **J.L. Mathieu**. *Improving the energy efficiency of buildings participating in power system ancillary services*. MCubed Symposium, Ann Arbor, MI. Nov. 2017.
- [P15] ****P. Giessner**, I. Hiskens, **J.L. Mathieu**, J. Johnson, S. Afshari, and A. Keskar. *Energy storage through building HVAC systems*. UM Undergraduate Research Opportunities Program Symposium, Ann Arbor, MI. Aug. 2017.
- [P14] ****M. Yao**, **J.L. Mathieu**, and D.K. Molzahn. *Using demand response to improve electric power system stability margins*. UM Engineering Graduate Symposium, Ann Arbor, MI. Nov. 2016.
- [P13] ****S. Crocker**, A. Stuhlmacher, and **J.L. Mathieu**. *Effects of aggregate load control on the physical components of distribution networks*. IEEE Power & Energy Society General Meeting Student Poster Competition, Boston, MA. July 2016.

- [P12] **A. Stuhlmacher, S. Crocker, and **J.L. Mathieu**. *Effects of aggregate load control on the physical components of distribution networks*. UM Summer Research Opportunities Program Symposium, Ann Arbor, MI. July 2016.
- [P11] **S. Crocker and **J.L. Mathieu**. *Adaptive state estimation and control of thermostatic loads for real-time energy balancing*. UM Engineering Graduate Symposium, Ann Arbor, MI. Oct. 2015.
- [P10] **B. Li and **J.L. Mathieu**. *Chance-constrained optimal power flow with uncertain load control*. UM Engineering Graduate Symposium, Ann Arbor, MI. Oct. 2015.
- [P9] **Y. Lin, **J.L. Mathieu**, and J. Johnson. *Environmental impacts of using distributed energy storage for power system reserves*. International Symposium on Sustainable Systems and Technology, Dearborn, MI. May 2015.
- [P8] **G.S. Ledva, E. Vrettos, S. Mastellone, G. Andersson, and **J.L. Mathieu**. *Applying networked estimation and control algorithms to address communication bandwidth limitations and latencies in demand response*. UM Engineering Graduate Symposium, Ann Arbor, MI. Nov. 2014.
- [P7] **G. Vuylsteke, **J.L. Mathieu**, and P. Howe. *Tangible benefits of using non-disruptive demand response to help the power grid*. UM Undergraduate Research Opportunities Program Symposium, Ann Arbor, MI. Aug. 2014.
- [P6] ****J.L. Mathieu** and D.S. Callaway. *Mitigating renewables intermittency through non disruptive load control*. PSERC Future Grid Initiative Workshop, Berkeley, CA. Dec. 2011.
- [P5] ****J.L. Mathieu**, S. Koch, and D.S. Callaway. *Modeling, state estimation, and control of thermostatically controlled loads for load following and regulation*. UC Berkeley Energy Symposium, Berkeley, CA. Oct. 2011.
- [P4] ****J.L. Mathieu**, S. Koch, and D.S. Callaway. *Modeling, state estimation, and control of thermostatically controlled loads for load following and regulation*. Lawrence Livermore National Laboratory Current Challenges in Computing Conference: Energy Resources Modeling, Napa, CA. Aug. 2011.
- [P3] ****J.L. Mathieu**, A.J. Gadgil, D.S. Callaway, P.N. Price, and S. Kiliccote. *Response of commercial and industrial facilities to dynamic electricity prices*. UC Berkeley Energy Symposium, Berkeley, CA. Mar. 2010.
- [P2] **M. Seflek, **T. Khan, **J.L. Mathieu**, K. Jahani, and A.J. Gadgil. *Arsenic-free Bangladesh*. National Collegiate Inventors and Innovators Alliance Annual Conference, Tampa, FL. Mar. 2007.
- [P1] **K. Wasserman, M.B. Greytak, **J.L. Mathieu**, A.K. Baker, J.D. Chambers, and B.M. Mueller. *From waves to watts: A wave energy conversion device for the Charles river basin*. Marine Technology Society & IEEE OCEANs Conference Student Poster Session, Kobe, Japan. Feb. 2004.

Funding

NSF I-Corps Grant

\$50k

Fast Timescale Residential Demand Response

Jun 2020 - Dec 2020

PI/TL, with Team Members EL Gregory Ledva and IM Hawk Asgeirsson

ARPA-E OPEN Project

\$2,900k

Overcoming the Technical Challenges of Coordinating Distributed Load Resources at Scale

Jun 2019 - Jun 2022

PI, with Team Members Ian Hiskens, Duncan Callaway, Drew Geller (LANL), and Scott Hinson (Pecan Street Inc.)

NSF CAREER Award & REU Supplement	\$516k
<i>Stochastic Capacity Scheduling and Control of Distributed Energy Storage Enabling Stacked Services</i>	
Feb 2019 - Jan 2024	
PI	
Alfred P. Sloan Foundation Grant	\$250k
<i>Price, Generation, Emissions, and Transmission Impacts of Energy Storage in PJM</i>	
Jan 2019 - Dec 2020	
Co-PI, with PI Catherine Hausman (Public Policy)	
NSF CPS Grant (Small)	\$500k
<i>Scalable and Safe Control Synthesis for Systems with Symmetries</i>	
Jan 2019 - Dec 2021	
Co-PI, with PI Necmiye Ozay	
DOE Building Technologies Office – Subcontract from SLAC National Accelerator Laboratory	\$500k
<i>I-DREEM: Impact of Demand Response on short and long term building Energy Efficiency Metrics</i>	
Feb 2018 - Feb 2022	
UM PI and Lead Co-PI, with Lead PI Rishee Jain and Team Members Ian Hiskens and Jeremiah Johnson	
Full project funding: \$1,700k	
DOE Solar Energy Technologies Office – Subcontract from Argonne National Laboratory	\$220k
<i>Mitigating Phase Unbalance for Distribution Systems with High Penetrations of Solar PV</i>	
Nov 2018 - Dec 2019	
UM PI, with Lead PI Daniel Molzahn and Team Members Ian Hiskens, Line Roald, and David Pinney (NRECA)	
Full project funding: \$750k	
NSF Engineering Research Center Planning Grant	\$100k
<i>Comprehensive Energy Storage Solutions in Electrified Transportation</i>	
Sep 2018 - Aug 2019	
Co-I, with PI Anna Stefanopoulou and Co-PIs Heath Hofmann, Don Siegel, Christian Lastoskie, and Chris Mi	
Michigan Institute for Computational Discovery and Engineering Catalyst Grant	\$75k
<i>Computational Energy Systems</i>	
Apr 2017 - Mar 2018	
Co-PI, with PI Pascal Van Hentenryck and Co-PIs Jon Lee, Ruiwei Jiang, and Eunshin Byon	
UM College of Engineering Team Development Seed Funding	\$7k
<i>Harnessing Highly Distributed Load Resources for Renewable Integration</i>	
Sep 2016	
Co-PI, with PI Ian Hiskens	
UM Office of Research Seminar Grant & Renewal	\$15k
<i>Seminar Series on Emerging Topics in Sustainable Electric Power Systems</i>	
Jul 2016 - Jun 2018	
PI, with Co-PIs Ian Hiskens, Pascal Van Hentenryck, Ruiwei Jiang, and Jeremiah Johnson	
Matching funds from ECE, IOE, SNRE/SEAS, UMEI: \$11.5k	
UM Graham Sustainability Institute MCubed Sustainability Block Grant	\$10k
<i>Urban Sustainability: Energy, Food and Health</i>	
Jun 2016 - May 2017	
Co-PI, with PI Marie O'Neill and Co-PI Ming Xu	

UM MCubed Program Grant	\$60k
<i>Improving the Energy Efficiency of Buildings Participating in Power System Ancillary Services</i>	
Oct 2015 - Dec 2017	
PI, with Jeremiah Johnson and Ian Hiskens	
NSF EAGER: Renewables	\$279k
<i>Demand Response Algorithms to Improve Electric Power System Stability Margins</i>	
Sep 2015 - Aug 2018	
PI	
NSF Environmental Sustainability Grant	\$310k
<i>Environmental Impacts of Using Distributed Energy Storage for Power System Reserves</i>	
Sep 2015 - Aug 2019	
Co-PI, with PI Jeremiah Johnson	
NSF EPCN Grant & REU Supplement	\$408k
<i>Inferring the Behavior of Distributed Energy Resources from Incomplete Measurements</i>	
Aug 2015 - Jul 2019	
PI, with Co-PI Laura Balzano	
NSF CyberSEES Grant (Type 1) & REU Supplement	\$416k
<i>Data-Driven Approaches to Managing Uncertain Load Control in Sustainable Power Systems</i>	
Sep 2014 - Aug 2017	
PI, with Co-PIs Siqian Shen and Ian Hiskens	
UM Energy Institute PISET Grant & Renewal	\$80k
<i>Assessing the Environmental Impacts of Providing Power System Reserves with Demand Response and Distributed Energy Storage</i>	
Sep 2014 - Dec 2016	
PI, with Jeremiah Johnson	

Talks

- (Upcoming) National Academy of Engineering US Frontiers of Engineering Symposium, TBD, Feb 2021.
- (Upcoming) Carnegie Mellon University (virtual), *Network-Aware Electric Load Coordination Architectures and Control Strategies*, Oct 9, 2020.
- (Upcoming) Conference on Probabilistic Methods Applied to Power Systems (virtual), Panel: Economic Considerations of Risk and Uncertainty, *Chance-Constrained Optimization of Coupled Water-Power Distribution Networks*, Aug 2020.
- (Upcoming) IEEE PES General Meeting (virtual), Panel: Research and Educational Experiences of NSF CAREER Awardees, *Stochastic Capacity Scheduling and Control of Distributed Energy Storage Enabling Stacked Services*, Aug 2020.
- (Upcoming) Iowa State University (virtual), *Network-Aware Electric Load Coordination Architectures and Control Strategies*, Jul 21, 2020.
- Colorado School of Mines (Golden, CO), *Network-Aware Electric Load Coordination Architectures and Control Strategies*, Feb 28, 2020.
- ARPA-E Open 2018 – Grid Projects Kick-off Meeting (New Orleans, LA), *Overcoming the Technical Challenges of Coordinating Distributed Load Resources at Scale*, Feb 19, 2020.
- NSF CPS PI Meeting (Arlington, VA), *Lightning Talk: Scalable and Safe Control Synthesis for Systems with Symmetries*, Nov 22, 2019.
- Georgia Tech Workshop on Electric Energy Systems and Optimization (Atlanta, GA), *The Value of Including Unimodality Information in Distributionally Robust Optimal Power Flow*, Nov 15, 2019.

- IEEE Global Conference on Signal and Image Processing (Ottawa, Canada), Symposium: Machine Learning, Optimization, and Security for Future Energy Delivery Systems, *Learning About Loads to Improve Power System Operation and Control*, Nov 13, 2019. (Keynote)
- North Carolina State University (Raleigh, NC), Panel: Power Shift – The Future of Energy and the Women Shaping It, Nov 5, 2019.
- Michigan Public Services Commission Distribution Planning Stakeholder Meeting (Lansing, MI), *DER Coordination as a Non-wire Solution: Opportunities and Challenges in Michigan*, Oct 16, 2019.
- IEEE PES General Meeting (Atlanta, GA), Panel: The Economics of Battery Storage under Different Market Structures, *Scheduling and Controlling Aggregations of Distributed Energy Storage Devices to Provide Stacked Services*, Aug 8, 2019.
- IEEE PES General Meeting (Atlanta, GA), Panel: Distributed Demand Response Dilemma: Defect or Engage, *Coordinating Loads to Provide Ancillary Services While Keeping Consumers Happy*, Aug 6, 2019.
- Ford Motor Company Research and Innovation Center (Dearborn, MI), *Coordinating Uncertain Electric Vehicles for Grid Services*, June 5, 2019.
- Isaac Newton Institute (Cambridge, UK), The Mathematics of Energy Systems Closing Workshop: Looking forward to 2050, *Optimal Power Flow with Stochastic Reserves*, Apr 30, 2019.
- Ceres and UM Energy Institute Electric Vehicle Open Forum and Policy Roundtable (Ann Arbor, MI), Panel: Michigan’s Grid and Charging Infrastructure: Empirical Analysis and Outlook, Apr 3, 2019.
- UM SEAS Climate + Energy Theme Lightning Talks (Ann Arbor, MI), *Supporting Renewable Energy Integration with Flexible Loads and Storage*, Mar 21, 2019.
- UM SEAS Cities + Mobility + Built Environment Theme Lightning Talks (Ann Arbor, MI), *Using Appliances and University of Michigan Buildings as Batteries to Support Renewable Energy Integration*, Feb 27, 2019.
- Indian Institute of Technology Bombay – NSF – Japan Science and Technology Agency – Research Council of Norway Workshop on Distributed Energy Management and Data Sciences for Smart Grids (Mumbai, India), *Network-Aware Cost-Effective Coordination of Distributed Energy Resources*, Jan 15, 2019.
- Michigan State University (East Lansing, MI), *An Optimal Power Flow Approach to Improve Power System Voltage Stability Using Demand Response*, Oct 11, 2018.
- University of Vermont Future of Energy Workshop (Burlington, VT), *Coordinating Distributed Energy Resources Without Breaking the Bank, or the Grid*, Sep 27, 2018. (Keynote)
- IEEE PES General Meeting (Portland, OR), Panel: The Role of DERs in the Transmission-Distribution Coordination, *Using DERs in the Distribution System to Improve Transmission System Voltage and Rotor Angle Stability*, Aug 9, 2018.
- University of Michigan Energy Institute UROP Lunchbox Discussion (Ann Arbor, MI), *Coordinating Electric Loads to Improve Power System Sustainability, Reliability, and Economics*, Jul 24, 2018.
- University of Illinois Urbana Champaign (Urbana, IL), *Real-Time Energy Disaggregation of a Distribution Feeder’s Demand Using Online Learning*, Apr 23, 2018.
- Stanford Smart Grid Seminar (Palo Alto, CA), *A Multiperiod Optimal Power Flow Approach to Improve Power System Voltage Stability Using Demand Response*, Mar 1, 2018.
- Technical University of Denmark (Lyngby, Denmark), *Demand Response Algorithms to Improve Electric Power System Stability Margins*, Jun 26, 2017.
- Commonwealth Scientific and Industrial Research Organisation (CSIRO) Energy Centre (Newcastle, Australia), *Overview of Load Control Research*, Nov 10, 2016.
- IEEE SmartGridComm (Sydney, Australia), Workshop: Smart Buildings As Enablers for a Smarter Grid, *Engaging Distributed Flexible Electric Loads in Power System Operation*, Nov 6, 2016.

- UM Control Seminar (Ann Arbor, MI), *Optimal Scheduling and Control of Distributed Energy Storage to Provide Power Grid Support*, Sep 23, 2016.
- IEEE PES General Meeting (Boston, MA), Panel: Modeling the End-User in CPS-based Simulation Studies, *Scheduling and Controlling Building Power Consumption to Provide Ancillary Services*, Jul 20, 2016.
- NSF Workshop on Cyber-Physical Systems Applications to the Power Grid (Boston, MA), *Scheduling, Inference, and Coordination of Distributed Energy Resources: Overview of 3 NSF-funded projects*, Jul 16, 2016.
- Göran Andersson's Farewell Event at ETH Zurich (Zurich, Switzerland), *Managing Communication Delays and Model Error in Demand Response*, Jun 10, 2016.
- Institute for Mathematics and its Applications (Minneapolis, MN), Workshop: Control at Large Scales – Energy Markets and Responsive Grids, *Inferring the Behavior of Distributed Flexible Electric Loads*, May 12, 2016.
- University of California at San Diego Seminars in Energy Research (San Diego, CA), *Inference and Control of Electric Loads Given Sparse Measurements and Communications Delays*, Apr 20, 2016.
- MIT Department of Mechanical Engineering (Cambridge, MA), *Inference and Control of Electric Loads Given Sparse Measurements and Communications Delays*, Apr 8, 2016.
- University of Toronto Centre for Power and Information Seminar (Toronto, Canada), *Inference and Control of Distributed Energy Resources with Sparse Measurements and Communications Delays*, Dec 4, 2015.
- LBNL/UC Berkeley DR/Renewables/ISO Meeting (Berkeley, CA), *Scheduling and Coordinating Uncertain Electric Loads to Provide Power System Reserves*, Mar 6, 2015.
- Cornell University Information, Systems, and Networks Seminar Series (Ithaca, NY), *Uncertain Power System Reserves from Electric Loads*, Nov 14, 2014.
- Schloss Dagstuhl (Wadern, Germany), Seminar: Modeling, Verification, and Control of Complex Systems for Energy Networks, *Uncertain Power System Reserves from Loads*, Oct 30, 2014.
- UM ECE Administrative Staff Lecture (Ann Arbor, MI), *How Your Refrigerator Can Help Get More Renewable Energy on the Power Grid*, Oct 17, 2014.
- IEEE Transportation Electrification Conference and Expo (Dearborn, MI), Panel: Transportation Technologies of Vehicle to Infrastructure Interaction: Current Status and Challenges, *Coordinating Uncertain Electric Vehicles for Demand Response*, Jun 16, 2014.
- Los Alamos National Laboratory Center for Nonlinear Studies (Los Alamos, NM), *Planning and Control of Uncertain Electric Loads to Help out the Power Grid*, Apr 29, 2014.
- University of New Mexico Department of Mechanical Engineering (Albuquerque, NM), *How Your Refrigerator Can Help Get More Renewable Energy on the Power Grid*, Apr 11, 2014.
- IEEE UM Student Branch – Professor Speaker Series (Ann Arbor, MI), *How Your Refrigerator Can Help Get More Renewable Energy on the Power Grid*, Mar 12, 2014.
- UM Control Seminar (Ann Arbor, MI), *Planning and Control of Uncertain Electric Loads to Help Out the Power Grid*, Feb 14, 2014.
- IEEE Conference on Decision and Control (Florence, Italy), Workshop: Ancillary Services from Flexible Loads to Help the Electric Grid of the Future, *Demand Response Today and Thermostatic Loads for Ancillary Services*, Dec 9, 2013.
- University College Dublin Electricity Research Centre, (Dublin, Ireland), *Planning and Control of Demand Response Resources Given Partial Information and Uncertainty*, Nov 26, 2013.
- IEEE PES General Meeting (Vancouver, Canada), Panel: Grid Integration of Energy Efficient Buildings, *Theoretical, Practical and Market-related Issues Associated with the Challenges of Making Buildings Responsive to Real-Time Power System Conditions*, Jul 24, 2013.
- IEEE PES General Meeting (Vancouver, Canada), Transaction Paper Presentation, *State Estimation and Control of Electric Loads to Manage Real-Time Energy Imbalance*, Jul 24, 2013.

- University of Washington Departments of Electrical and Mechanical Engineering (Seattle, WA), *Harnessing Distributed Flexible Resources for Sustainable Electric Energy Systems*, Apr 23, 2013.
- INRIA – National Institute for Research in Computer Science and Control (Paris, France), *Controlling Electric Loads to Manage Energy Imbalances in Power Systems*, Apr 17, 2013.
- Dartmouth College Thayer School of Engineering (Hanover, NH), *Harnessing Distributed Flexible Resources for Sustainable Electric Energy Systems*, Apr 4, 2013.
- UM Department of Electrical Engineering and Computer Science (Ann Arbor, MI), *Harnessing Distributed Flexible Resources for Sustainable Electric Energy Systems*, Mar 25, 2013.
- University of Vermont School of Engineering (Burlington, VT), *Harnessing Distributed Flexible Resources for Sustainable Electric Energy Systems*, Mar 21, 2013.
- York University Lassonde School of Engineering (Toronto, Canada), *Harnessing Distributed Flexible Resources for Sustainable Electric Energy Systems*, Feb 28, 2013.
- University of California at Santa Barbara Department of Mechanical Engineering (Santa Barbara, CA), *Harnessing Distributed Flexible Resources for Sustainable Electric Energy Systems*, Feb 4, 2013.
- University of Florida Laboratory for Cognition and Control in Complex Systems Interdisciplinary Workshop on Smart Grid Design and Implementation (Gainesville, FL), *Harnessing Residential Loads for Demand Response: Engineering and Economic Considerations*, Dec 8, 2012.
- Lucerne University of Applied Science and Arts (Lucerne, Switzerland), *Residential Loads for Demand Response*, Nov 26, 2012. (with Evangelos Vrettos)
- Austrian Institute of Technology Energy Department (Vienna, Austria), *Understanding the Capabilities of Electric Loads in Traditional and Emerging Demand Response Programs*, Nov 6, 2012.
- EPFL – Swiss Federal Institute of Technology (Lausanne, Switzerland), *Managing Energy Imbalances in Power Systems using Residential Appliances*, Oct 30, 2012.
- ETH Zurich – Swiss Federal Institute of Technology (Zurich, Switzerland), *Modeling, Analysis, and Control of Electric Loads for Traditional and Emerging Demand Response Programs*, Sept 28, 2012.
- Pacific Northwest National Laboratory Smart Grid Controls, Optimization, and Economics Workshop (Richland, WA), *Moving from Open-loop to Closed-loop Control of Demand Response Resources*, Jun 15, 2012.
- LBNL Environmental Energy Technologies Division Seminar (Berkeley, CA), *Modeling, Analysis, and Control of Demand Response Resources*, Apr 27, 2012.
- UC Berkeley Department of Mechanical Engineering (Berkeley, CA), *Modeling, Analysis, and Control of Demand Response Resources*, Apr 19, 2012.
- UC Berkeley Expert System Technologies Lab Seminar (Berkeley, CA), *How your refrigerator can help the smart grid: understanding the size of the resource in California, potential revenues, and costs*, Apr 4, 2012.
- Carnegie Mellon University Conference on the Electricity Industry (Pittsburgh, PA), *The Value of Real-Time Data in Controlling Electric Loads for Demand Response*, Mar 13, 2012.
- UC Berkeley Center for the Built Environment Building Science Group Seminar (Berkeley, CA), *Estimating What Didn't Happen: Demand Response Baseline Models and their Errors*, Nov 30, 2011.
- LBNL/UC Berkeley DR/Renewables/ISO Meeting (Berkeley, CA), *Modeling, State Estimation, and Control of Aggregated Heterogeneous Appliances for Load Following*, Oct 17, 2011.
- UC Berkeley Variaya Energy Group (Berkeley, CA), *Modeling, State Estimation, and Control of Aggregated Heterogeneous Appliances for Power Systems Services*, Jul 21, 2011.
- LBNL/UC Berkeley DR/Renewables/ISO Meeting (Berkeley, CA), *Examining Uncertainty in Demand Response Baseline Models and Variability in Automated Responses to Dynamic Pricing*, Apr 7, 2011.
- LBNL Environmental Energy Technologies Division Seminar (Berkeley, CA), *Methods for Analyzing Electric Load Shape*, Jun 17, 2010. (with Phillip Price)

- UC Berkeley Blum Center Safe Water and Sanitation Symposium (Berkeley, CA), *Recent Fieldwork, Preliminary Prototype, and Preliminary Survey Results for ARUBA in Bangladesh*, Apr 10, 2009.
- UC Berkeley Blum Center Safe Water and Sanitation Symposium (Berkeley, CA), *Design for Sustainable Communities: Removing Arsenic from Drinking Water in Rural Bangladesh*, Feb 13, 2008.
- Engineers for a Sustainable World (ESW) Annual Conference (San Francisco, CA), *Design for Sustainable Communities: Removing Arsenic from Drinking Water in Rural Bangladesh*, Feb 5, 2008.
- Aquatic Nuisance Species Task Force Spring Meeting (Hyannis, MA), *MIT Sea Grant Multilingual Aquatic Invasive Species Outreach Campaign*, May 25, 2006.

Workshop Participation

- NSF I-Corps, (virtual), Apr-Jun 2020.
- NSF Workshop on Forging Connections between Machine Learning, Data Science, & Power Systems Research, Alexandria, VA, Mar 2020.
- NREL Workshop and Demo on Real-time Optimization and Control of Next-Generation Distribution Infrastructure, Golden, CO, Jan 2020.
- NSF Cyber-Physical Systems PI Meeting, Arlington, VA, Nov 2019.
- ARPA-E Energy Innovation Summit, Denver, CO, Jul 2019.
- Indian Institute of Technology Bombay – NSF – Japan Science and Technology Agency – Research Council of Norway Workshop on Distributed Energy Management and Data Sciences for Smart Grids, Mumbai, India, Jan 2019.
- NSF Cyber-Physical Systems PI Meeting, Alexandria, VA, Nov 2018.
- National Renewable Energy Laboratory Autonomous Energy Grids Workshop, Golden, CO, Sep 2017.
- IEEE PES Power and Energy Education Committee Workshop: Cyber-Physical Systems Applications to the Power Grid, Boston MA, Jul 2016.
- Institute for Mathematics and its Applications Workshop: “Control at Large Scales: Energy Markets and Responsive Grid,” Minneapolis, MN, May 2016.
- Big Ten Women’s Workshop, Milwaukee, WI, Mar 2016.
- Michigan Road Scholars, May 2015.
- NSF CAREER Proposal Writing Workshop, Boston, MA, Apr 2015.
- Dagstuhl Seminar: “Modeling, Verification, and Control of Complex Systems for Energy Networks,” Schloss Dagstuhl, Wadern, Germany, Oct 2014.
- ARPA-E Grid of the Future Workshop: From Vertical to Flat, Washington, DC, Jul 2014.
- IEEE PES Power and Energy Education Committee Workshop: Transforming Cyber-Physical Systems Education with Emphasis on the Power Grid, Washington, DC, Jul 2014.
- Dissertations Initiative for the Advancement of Climate Change Research (DISCCRS) Symposium, Colorado Springs, CO, Oct 2013.
- University of Florida Laboratory for Cognition and Control in Complex Systems Interdisciplinary Workshop on Smart Grid Design and Implementation, Gainesville, FL, Dec 2012.
- PSERC Future Grid Initiative Workshop, University of California, Berkeley, CA, Dec 2011.
- International Development Design Summit, MIT, Cambridge, MA, Jul-Aug 2008.
- National Collegiate Inventors and Innovators Alliance (NCIIA) Advanced Innovation to Venture Workshop, MIT, Cambridge, MA, Mar 2008.
- Engineers for a Sustainable World Business/Engineering Sustainability Workshop, University of Maryland, College Park, MD, Feb 2007.

In the News

- "Student Energy Club hosts all-female panel: discusses women in STEM and the future of energy." *NC State University Technician*, Nov 7, 2019.
- "The National Academy of Engineering invites Prof. Johanna Mathieu to symposium to advance the engineering frontier." *The Michigan Engineer News Center*, Jul 16, 2019.
- "New research for the future of sustainable power and energy." UM ECE News and Awards Website, Feb 20, 2019.
- "Battery economics could power the future of energy." *The Michigan Engineer News Center*, Feb 19, 2019.
- "Innovative project tests the boundaries of HVAC demand response systems." *Electric Light and Power*, Feb 15, 2019.
- "How air conditioners could advance a renewable power grid." *The Michigan Engineer News Center & The University Record*, Feb 6, 2019.
- "Johanna Mathieu receives NSF CAREER Award to help build a smarter, more sustainable grid." UM ECE News and Awards Website, Feb 1, 2019.
- "What this week's natural gas crisis tells us about Michigan's energy infrastructure needs." *Michigan Radio Stateside*, Feb 1, 2019.
- "Using University of Michigan buildings as batteries." *The Michigan Engineer News Center*, Sep 21, 2017.
- "The Hidden Systems that our Society Relies on are Stupid: Power." *The Michigan Engineer Magazine*, Spring 2015.
- "EmPOWERing Homeowners: For those with smart meters, energy knowledge is power. And money." *Consumers Energy Re: Energize Publication*, 2014.
- "Prof. Johanna Mathieu Working to Bring Power from Sustainable Sources to Your Home." UM ECE News and Awards Website, 2014.

Students, Postdocs, and Visitors

Ph.D. Students.....

- Bowen Li, Jan 2014 - Dec 2018, now at Argonne National Laboratory
- Gregory Ledva, Sep 2014 - Dec 2018, now a postdoc at UM
- Stephanie Crocker Ross, Sep 2014 - Dec 2019, now at The Brattle Group
NSF Graduate Research Fellow
Rackham Predoctoral Fellow
- Mengqi (Molly) Yao, Sep 2016 - Present
- Anna Stuhlmacher, Sep 2017 - Present
NSF Graduate Research Fellow
- Oluwagbemileke Oyefeso, Sep 2019 - Present, co-advised by I. Hiskens
- Ioannis Granitsas, Sep 2019 - Present, co-advised by I. Hiskens
- Jing Peng, Sep 2019 - Present
- Sunho Jang, Sep 2019 - Present, co-advised by N. Ozay
- Hannah Moring, Sep 2020 - Present

Postdocs.....

- Yashen Lin, Sep 2014 - May 2016, co-advised by J. Johnson, now at NREL
UM Energy Institute Partnerships for Innovation in Sustainable Energy Technologies Fellow
Dow Sustainability Postdoctoral Fellow
- Sina Afshari, Sep 2016 - Jul 2017, co-advised by J. Johnson and I. Hiskens, now at Ecosense Lighting

- Anulekha Dhara, Oct 2018 - Mar 2019
- Gregory Ledva, Jan 2019 - Present
- Shunbo Lei, Apr 2019 - Present, co-advised by I. Hiskens

Master's Students.....

- Anthoula Panagou (ETH Zurich), Master's thesis, May - Nov 2013, co-advised by M. Vrakopoulou and M. Zima, examined by G. Andersson
- Gregory Ledva (ETH Zurich), Master's thesis, Sep 2013 - Mar 2014, co-advised by E. Vrettos and S. Mastellone, examined by G. Andersson
- William Gourlay, Energy Systems Engineering project, May - Aug 2014
- Pragya Agrawal, Jun - Aug 2014, co-advised by L. Balzano and D. Molzahn
- Priya Thyagarajan, Energy Systems Engineering project, May - Aug 2015
- Mengqi Yao, Sep 2015 - Aug 2016
- Abigail Kern, Jan 2017 - Jun 2018, co-advised by J. Johnson
- Aditya Keskar, Master's thesis, May 2017 - Apr 2018, co-advised by J. Johnson and I. Hiskens
Rackham Summer Awardee
- Hanpyo Lee, Jan 2019 - Jun 2020
- Han Lee, Energy Systems Engineering project, Jun 2019 - Apr 2020
- Ruikai Xu, Sep 2019 - Apr 2020

Undergraduate Students.....

- Kristin Kowolik (UC Berkeley), Sep 2007 - Aug 2008, co-advised by A. Gadgil
- Shefah Qazi (UC Berkeley), Jan - Aug 2008, co-advised by A. Gadgil
- Mads Sørensen (DTU), Bachelor's Thesis, Feb - Jun 2013, co-advised by H. Jóhannsson
- Theis Bo Rasmussen (DTU), Bachelor's Thesis, Feb - Jun 2013, co-advised by H. Jóhannsson
- Gabrielle Vuylsteke, Jun - Dec 2014 & Sep 2016 - Apr 2017
UM Energy Institute Undergraduate Research Opportunities Program (UROP) Student
- Spencer Maroukis, Jun 2015 - Jun 2016
NSF Research Experiences for Undergraduates (REU) Student
- Sarah Peterson, May 2016 - Apr 2017
Summer Undergraduate Research in Engineering (SURE) Student
NSF Research Experiences for Undergraduates (REU) Student
- John Wolfe, May - Nov 2016
Summer Undergraduate Research in Engineering (SURE) Student
- Anna Stuhlmacher (Boston University), Jun - Jul 2016
UM Summer Research Opportunity Program (SROP) Student
- Paul Giessner, Jun - Aug 2017, co-advised by I. Hiskens and J. Johnson
UM Energy Institute Undergraduate Research Opportunities Program (UROP) Student
- Maggie Chen, May 2018 - Apr 2019
- Jordan Dongmo Nzangue, May 2018 - Apr 2019
- Catherine Bertcher, Sep 2018 - Present
NSF Research Experiences for Undergraduates (REU) Student
- Bruce Hicks (Mississippi State University), Jun - Jul 2019
UM Summer Research Opportunity Program (SROP) Student

- Miguel Siller (Universidad de Monterrey, Mexico), Jun - Aug 2019
UM Summer Undergraduate Research in Engineering (SURE) Student
- Brendan Mathews, Jul 2020 - Present
NSF Research Experiences for Undergraduates (REU) Student

Visiting Ph.D. Students.....

- Martin Wittrock (DTU), Feb - Jul 2015
- Lars Herre (KTH), May - Oct 2017

Ph.D. Committees.....

- Sina Sadeghi Bagsorkhi (UM EE:S), 2015, Advisor: Ian Hiskens
- Kan Zhou (UM EE:S), 2015, Advisor: Heath Hoffman
- Ian Beil (UM EE:S), 2015, Advisor: Ian Hiskens
- Elizabeth Ratnam (U Newcastle AU), 2016, Advisor: Steven Weller
- Chanaka Keerthisinghe (U Sydney AU), 2016, Advisors: Gregor Verbič, Archie Chapman
- Shankar Mohan (UM EE:S), 2017, Advisor: Anna Stefanopoulou
- Jonathan Martin (UM EE:S), 2017, Advisor: Ian Hiskens
- Olivier Mégel (ETH), 2017, Advisor: Göran Andersson
- Daniel Esteban Morales Bondy (DTU), 2017, Advisor: Henrik Bindner
- Jennifer Marley (UM EE:S), 2017, Advisor: Ian Hiskens
- Jun Hou (UM EE:S), 2017, Advisors: Jing Sun, Heath Hofmann
- Erik Miehling (UM EE:S), 2018, Advisor: Demosthenis Teneketzis
- Yiling Zhang (UM IOE), 2019, Advisor: Siqian Shen
- Yuanyuan Guo (UM IOE), 2019, Advisor: Ruiwei Jiang
- Md Salman Nazir (UM EE:S), 2019, Advisor: Ian Hiskens
- Jonas Kersulis (UM ECE), 2019, Advisor: Ian Hiskens
- Geunyeong Byeon (UM IOE), 2020, Advisor: Pascal Van Hentenryck
- Yejun (Wayne) Lao (UM CEE), 2020, Advisor: Jeffrey Scruggs
- Youngchan Jang (UM IOE), Advisor: Eunshin Byon
- Aditya Keskar (NCSU CCEE), Advisor: Jeremiah Johnson

Service

Society Memberships.....

- Institute of Electrical and Electronics Engineers (IEEE)
 - Power and Energy Society (PES)
 - Control Systems Society (CSS)

Technical Committees.....

- IEEE PES Smart Buildings Loads and Customer Systems (SBLC) Technical Committee
 - Vice Chair, Jul 2019 - Present
 - Secretary, Sep 2018 - Aug 2019
 - Technical Committee Paper Coordinator (TCPC), Sep 2016 - Sep 2018
- IEEE CSS Technical Committee on Smart Grids (TC-SG)
- INFORMS ENRE Section Student Best Paper Award Committee, 2018

Editorships & Technical Program Committees.....

- o Editor, IEEE Transactions on Power Systems, Jan 2018 - Present
- o Editor, IEEE Power Engineering Letters, Jan 2018 - Present
- o Conference Editorial Board, IEEE Control Systems Society, Jul 2019 - Present
- o Chair, Technical Program Committee (SBLC papers), IEEE PES General Meeting, 2017, 2018
- o Chair, Technical Program Committee (SBLC papers), IEEE PES T&D Conference, 2018
- o Technical Program Committee, Power System Computation Conference, 2018, 2020
- o Technical Committee, IEEE Communications Society Best Readings in Smart Grid Communications, 2014
- o Technical Program Committee, IEEE SmartGridComm, 2013, 2017, 2018
- o Reviewer Committee, Conference on Probabilistic Methods Applied to Power Systems, 2020

Conferences, Workshops, and Tutorials.....

- o Tutorial Co-Organizer, INFORMS 2015:
"Uncertainty in Demand Response – Identification, Estimation, and Learning"
- o Workshop Co-Organizer, IEEE Conference on Decision and Control, 2013:
"Ancillary Services from Flexible Loads to Help the Electric Grid of the Future"
- o Invited Session Organizer and Chair, INFORMS Annual Meeting, 2018:
"Managing Uncertainty in Electric Power Networks"
- o Invited Session Organizer and Chair, American Control Conference, 2015:
"Load Coordination and Control in Electric Power Systems"
- o Session Chair, Power System Computation Conference, 2014, 2018, 2020
- o Session Chair, IEEE PES General Meeting, 2017, 2019
- o Session Chair, IEEE Conference on Decision and Control, 2013, 2016, 2018
- o Session Chair, North American Power Symposium, 2015
- o Session Chair, IEEE PES PowerTech Conference, 2019

Reviewing.....

- o *Journals*: IEEE Transactions on Power Systems; IEEE Transactions on Smart Grid; IEEE Transactions on Control Systems Technology; IEEE Transactions on Energy Conversion; IEEE Transactions on Automatic Control; IEEE Journal on Selected Areas in Communications: Smart Grid Communications Series; IEEE Transactions on Control of Network Systems; Automatica; ASME Journal of Dynamic Systems, Measurement, and Control; International Journal of Control; Energy Policy; Utilities Policy; Energy Systems; Sustainable Energy, Grids, and Networks; Energy and Buildings; International Journal of Electrical Power and Energy Systems; Environmental Science and Technology; Applied Energy; Complexity; Annual Reviews in Control; Journal of Energy Storage; Proceedings of the IEEE; IEEE Control Systems Letters
- o *Conferences*: IEEE PES PowerTech Conference; Hawaii International Conference on Systems Science; Power Systems Computation Conference; IEEE International Conference on Smart Grid Communications; American Control Conference; European Control Conference; IEEE Conference on Decision and Control; Mediterranean Conference on Control and Automation; First International Workshop on Smart Grid Modeling and Simulation; IEEE PES General Meeting; IEEE PES T&D Conference; IEEE Conference on Control Technology and Application; IEEE IP; North American Power Symposium, IEEE Photovoltaics Specialists Conference
- o *Proposals*: National Science Foundation; Ohio State University Sustainable and Resilient Economy Program; State of Utah Science, Technology and Research Initiative; Sloan Foundation; ARPA-E
- o *Applications*: UM Dow Sustainability Fellowships

Internal Service.....

- o ECE Faculty Search Committee, Sep 2014 - Present
- o ECE Power/Energy Graduate Student Advisor, Sep 2014 - Dec 2016, Sep 2019 - Present
- o Power System Seminar Series Organizer, Sep 2016 - Apr 2018
- o Energy Institute Visioning & Director Search Committee, Dec 2017 - Jul 2018
- o School for Environment and Sustainability Faculty Search Committee, Sep - Dec 2018
- o COE Nominating Committee, Sep 2019 - Present