

# Melvyn Tyloo

Physicist/Neuroscientist at the University of Exeter

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## EDUCATION

<b>PhD in Physics</b>	Lausanne, Switzerland
Swiss Federal Institute of Technology in Lausanne - EPFL	2020
<b>Master of Science in Physics</b>	Lausanne, Switzerland
Swiss Federal Institute of Technology in Lausanne - EPFL	2016
<b>Bachelor of Science in Physics</b>	Lausanne, Switzerland
Swiss Federal Institute of Technology in Lausanne - EPFL	2014

## EXPERIENCE

<b>University of Exeter</b>	Oct. 2024 –
Postdoc Research Fellow, Dep. Mathematics and Statistics and the Living Systems Institute	Exeter, United Kingdom
<ul style="list-style-type: none"><li>• Full development of a software for model inference and control of cells sensitive to light (opsin).</li><li>• Creation and Teaching of master class MTHM009 Advanced topics in mathematical and computational biology.</li><li>• Educational commitment beyond university lectures, developing a project on information theory for the Exeter Mathematics School.</li><li>• Member of the hiring committee for new research fellows.</li><li>• Supervision of master students at the University of Exeter.</li><li>• Remote supervision of master students at the Los Alamos National Laboratory.</li></ul>	
<b>Los Alamos National Laboratory (LANL)</b>	Feb. 2022 – Oct. 2024
Director's Postdoc Fellow at the Theoretical Division (T-4, T-5, CNLS)	Los Alamos, NM, United States
<ul style="list-style-type: none"><li>• Obtained research funding through the Laboratory directed research and development program: LDRD/PRD Fellowship as Director's Postdoc (3 years) and LDRD/ER Seedlings (1 year).</li><li>• 2 SPOT Awards for my contribution to the Laboratory's mission.</li><li>• Hiring and supervision of graduate students during Summer internships.</li><li>• Guest Editor for a focus issue in Journal of Physics: Complexity.</li><li>• Organization of satellite session at the Conference on Complex systems 2023, Salvador, Brazil.</li></ul>	
<b>University of Geneva</b>	Apr. 2021 – Oct. 2021
Postdoctoral researcher at the Department of Quantum Matter Physics	Geneva, Switzerland
<ul style="list-style-type: none"><li>• Continuation of my previous postdoc position but with a funding from the University of Geneva.</li><li>• Supervision of a PhD candidate.</li><li>• Organization of satellite session at the Conference on Complex systems 2021, Lyon, France.</li></ul>	
<b>University of Applied Sciences of Western Switzerland</b>	Oct. 2016 – Feb. 2021
Postdoctoral researcher and PhD candidate researcher in the School of Engineering	Sion, Switzerland
<ul style="list-style-type: none"><li>• Substitute lecturer for the class of General Physics and the Laboratory.</li><li>• Supervision of a PhD candidate.</li><li>• Organization of weekly seminars at the School of Engineering.</li><li>• Invited researcher at the Center for Nonlinear Studies (CNLS) at the Los Alamos National Laboratory.</li></ul>	
<b>Tutoring</b>	2011 – 2016
Tutor for physics, maths, chemistry, probability and programming.	Lausanne, Switzerland
<ul style="list-style-type: none"><li>• One-on-one and group tutoring for students at EPFL, the University of Lausanne (UNIL), and high-schools.</li></ul>	

## SKILLS

**Language**  
French (native), English (fluent), German (intermediate).

**Programming**  
C++, Julia, Matlab, Co-Simulation with hardware in the loop.

## RESEARCH INTERESTS

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- Complex networks and network optimal control.
- Control of neurons spiking rates and synaptic plasticity.
- Inference of system parameters, uncertainty quantification.
- Information theory for complex systems analysis.
- Resilience of networked systems to stochastic and deterministic perturbations.
- Statistical physics of coupled dynamical systems out-of-equilibrium.
- Synchronization of coupled dynamical systems.

## TEACHING

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4. **Advanced topics in mathematical and computational biology (MTHM009, 2025).** Module for the master's degree. Mathematics, Faculty of Environment, Science and Economy, University of Exeter, Exeter, UK. *Creation and teaching of a series of lectures and exercises on optimal control applied to phase-reduced systems including the following topics: Introduction to the phase description of periodic orbits; isochrons; phase-response curves; direct and adjoint methods; Euler-Lagrange equations; energy-optimal phase control; energy-optimal phase control with charge balance constraint; time-optimal phase control; Pontryagin's minimum principle; Bang-bang control; Hamiltonian formalism; quadratic-integrate-and-fire (QIF) neurons.*
3. **How much information is contained in a signal? (2025)** Project on information theory for the Exeter Mathematics School, jointly run by the Exeter College and the University of Exeter. *Creation of a project giving an introduction to information theory, including entropy, mutual information, information channels.*
2. **Substitute lecturer for the class of General Physics and the Laboratory (2016-2021).** School of Engineering, University of Applied Sciences of Western Switzerland, Sion, Switzerland. *Teaching of general physics including classical mechanics, thermodynamics and electrodynamics; supervision of the laboratory.*
1. **Tutoring (self-employed) for students from mid-school to university level (2011-2016).** Switzerland. *Creation of lectures and exercises specifically tailored for the students.*

## ORGANIZATION OF INTERNATIONAL CONFERENCES

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8. Conference on Complex Systems (CCS) 2025, Siena, Italy. **Member of the program committee.** Sep. 1-5, 2025 [\[Site\]](#)
7. 14th International Conference on Complex Networks & Their Applications (Complex Networks 2025), Binghamton, New York, USA. **Member of the program committee.** Dec. 9-11, 2025 [\[Site\]](#)
6. Conference on Complex Systems (CCS) 2025, Siena, Italy. **Member of the program committee.** Sep. 1-5, 2025 [\[Site\]](#)
5. 13th International Conference on Complex Networks & Their Applications (Complex Networks 2024), Istanbul, Turkey. **Member of the program committee.** Dec. 10-12, 2024 [\[Site\]](#)
4. Conference on Complex Systems (CCS) 2024, Exeter, England. **Member of the program committee.** Sep. 2-6, 2024 [\[Site\]](#)
3. 12th International Conference on Complex Networks & Their Applications (Complex Networks 2023), Menton, France. **Member of the program committee.** Nov. 28-30, 2023 [\[Site\]](#)
2. Recent Advances in Learning and Data-Driven Modeling of Complex Systems, Satellite Symposium of the Conference on Complex Systems (CCS) 2023, Salvador, Brazil. **Organisation.** Oct. 18-19, 2023 [\[Site\]](#)
1. Data-based Diagnosis of Networked Dynamical Systems, Satellite Symposium of the Conference on Complex Systems (CCS) 2021, Lyon, France. Oct. 27, 2021 **Organisation.** [\[Site\]](#) [\[Link\]](#)

## EDITOR

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3. Journal of Physics: Complexity – Focus on Monitoring and Control of Complex Supply Systems. 2022-2023 **Editor** [\[Site\]](#)
2. Networks of Dynamical Systems, Frontiers in Network Physiology. 2022– **Review Editor** [\[Site\]](#)
1. Reviewer for: Journal of Physics: Complexity; Chaos; Physical Review Letters; Physical Review E; Nature Communications; Nature Communications Physics; Physica Scripta; Entropy; Scientific Reports; IEEE Conference on Decision and Control; IEEE American Control Conference; IEEE Control Systems Letters; SIAM Dynamical Systems; Physica A; Europhysics Letters; Physical Review E; IEEE TNSE; Chaos, Solitons and Fractals; Patterns; IEEE TPS; ACM Collective Intelligence CI'2025.

## RESEARCH FUNDINGS

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3. Exploratory Research Seedlings at LANL. 1 year of funding (~ \$150k) together with Marc Vuffray and Andrey Lokhov.
2. Director's Fellowship at LANL. 3 years of funding + additional material (~ \$500k).
1. Center for Nonlinear Studies Fellowship at LANL. (~ \$250k not used).

## PEER-REVIEWED PUBLICATIONS

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34. A. Nazerian, M. Asllani, **M. Tyloo**, W.L. Ku, F. Sorrentino, *The frequency response of networks as open systems*, Accepted in *Nature Communications* (2025). [\[Link\]](#)
33. A. Nazerian, M. Asllani, **M. Tyloo**, F. Sorrentino, *Open networks in discrete time: Passing vs. blocking behavior*, *Chaos* **35** (12) (2025). [\[Link\]](#)
32. **M. Tyloo**, M. Vuffray, L. Lokhov *Forced Oscillation Source Localization from Generator Measurements*, *IEEE Transactions on Power Systems* (2025). [\[Link\]](#)
31. **M. Tyloo**, *Predicting the response of structurally altered and asymmetrical networks*, *Phys. Rev. E* **112** (4), L042301 (2025). [\[Link\]](#)
30. **M. Tyloo**, J. González, N. Rubido, *Including the magnitude variability of a signal in the ordinal pattern analysis*, *Entropy*, **27**(8) 840 (2025). Special Issue: Ordinal Patterns-Based Tools and Their Applications. [\[Link\]](#)
29. L. Pagnier, R. Delabays, **M. Tyloo**, *Nontrivial Kron Reduction for Power Grid Dynamics Modeling*, 2025 *IEEE Kiel PowerTech*, Kiel, Germany pp. 1-6 (2025). [\[Link\]](#)
28. **M. Tyloo** (Invited Paper), *Resilience of the slow component in timescale-separated synchronized oscillators*, *Frontiers in Network Physiology*, **4**, 1399352 (2024). Insights in Networks of Dynamical Systems, Vol II. [\[Link\]](#) .
27. R. Delabays, L. Pagnier, B. Schäfer, **M. Tyloo**, D. Witthaut (Guest Editors), *Focus on Monitoring and Control of Complex Supply Systems*, *J. Phys. Complex.* **5**(4), 040201 (2024). [\[Link\]](#) .
26. J. Hindes, I.B. Schwartz, **M. Tyloo**, *Stability of Kuramoto networks subject to large and small fluctuations from heterogeneous and spatially correlated noise*, *Chaos* **33**, 113129 (2023). [\[Link\]](#) .
25. **M. Tyloo**, *Assessing the impact of Byzantine attacks on coupled phase oscillators*, *J. Phys. Complex.* **4**, 045005 (2023). [\[Link\]](#) .
24. **M. Tyloo** (Invited Paper), *Evolution of robustness in growing random networks*, *Entropy* **25**(9), 1340 (2023). Special Issue: Complexity, Entropy and the Physics of Information. [\[Link\]](#) .
23. R. Delabays, A.Y. Lokhov, **M. Tyloo**, M. Vuffray (Featured in [Physics]), *Locating the source of forced oscillations in transmission power grids*, *PRX Energy* **2**, 023009 (2023). [\[Link\]](#)

22. **M. Tyloo** (Invited Comment), *More is definitely different: the zebrafish as witness: Comment on "Structure and function in artificial, zebrafish and human neural networks" by Peng Ji et al., Physics of Life Reviews* **46**, 71-72 (2023). [\[Link\]](#).
21. **M. Tyloo**, J. Hindes, P. Jacquod, *Finite-time Correlations Boost Large Voltage-Angle Fluctuations in Electric Power Grids*, *J. Phys. Complex.* **4**, 015006 (2023). Focus on Monitoring and Control of Complex Supply Systems. [\[Link\]](#).
20. **M. Tyloo** (Invited Paper), *Faster network disruption from layered oscillatory dynamics*, *Chaos* **32**, 121101 (2022). Fast Track in the Focus Issue on Disruption of Networks and System Dynamics. [\[Link\]](#).
19. R. Delabays, **M. Tyloo**, *Heavy-tailed distribution of the number of papers within scientific journals*, *Quantitative Science Studies* **3** (3), 776-792 (2022). [\[Link\]](#).
18. **M. Tyloo**, *Layered complex networks as fluctuations amplifiers*, *J. Phys. Complex.* **3**, 03LT01 (2022). [\[Link\]](#).
17. P. Jacquod, **M. Tyloo**, *Propagation of non-Gaussian voltage angle fluctuations in high-voltage power grids*, *IFAC-PapersOnLine* **55-13** (2022) 67-72, Necsys 22, Zürich, Switzerland, July 5-7, 2022. [\[Link\]](#)
16. R. Delabays, L. Pagnier, **M. Tyloo**, *Locating fast-varying line disturbances with the frequency mismatch*, *IFAC-PapersOnLine* **55-13** (2022) 270-275, Necsys 22, Zürich, Switzerland, July 5-7, 2022. [\[Link\]](#)
15. J. Fritzsch, **M. Tyloo**, P. Jacquod, *Matrix Perturbation Theory of Inter-Area Oscillations*, *2021 60th IEEE Conference on Decision and Control (CDC)*, 3507-3512. [\[Link\]](#)
14. **M. Tyloo**, R. Delabays, P. Jacquod, *Reconstructing network structures from partial measurements*, *Chaos* **31**, 103117 (2021). [\[Link\]](#).
13. L. Pagnier, R. Delabays, **M. Tyloo**, *Locating line and node disturbances in networks of diffusively coupled dynamical agents*, *New J. Phys.* **23**, 043037 (2021). [\[Link\]](#).
12. **M. Tyloo**, R. Delabays, *System Size Identification from Sinusoidal Probing in Diffusive Complex Networks*, *J. Phys. Complex.* **2**, 025016 (2021). [\[Link\]](#).
11. R. Delabays, **M. Tyloo**, *Network inference using sinusoidal probing*, *IFAC-PapersOnLine* **54** (9), 696-700, *24th International Symposium on Mathematical Theory of Networks and Systems MTNS 2020: Cambridge United Kingdom*, (2021). [\[Link\]](#)
10. **M. Tyloo**, P. Jacquod, *Primary Control Effort in Realistic High-Voltage Power Networks*, *Proceedings of the 59th IEEE Conference on Decision and Control 2020*, (2020). [\[Link\]](#)
9. F. Baumann, I.M. Sokolov, **M. Tyloo**, *Periodic Coupling inhibits Second-order Consensus on Networks*, *Phys. Rev. E* **102**, 052313 (2020). [\[Link\]](#)
8. F. Baumann, I. M. Sokolov, **M. Tyloo**, *A Laplacian approach to stubborn agents and their role in opinion formation on influence networks*, *Phys. A* **557**, 124869 (2020). [\[Link\]](#)
7. **M. Tyloo**, P. Jacquod, *Primary Control Effort in Realistic High-Voltage Power Networks*, *IEEE Control Systems Letters*, **5** (3), (2020). [\[Link\]](#)
6. **M. Tyloo**, L. Pagnier, P. Jacquod, *The key player problem in complex oscillator networks and electric power grids: resistance centralities identify local vulnerabilities*, *Sci. Adv.* **5** (11), eaaw8359 (2019). [\[Link\]](#)
5. R. Delabays, **M. Tyloo**, P. Jacquod, *Rate of change of frequency under line contingencies in high voltage electric power networks with uncertainties*, *Chaos* **29**, 103130 (2019). Focus Issue on the Dynamics of Modern Power Grids. [\[Link\]](#)
4. **M. Tyloo**, P. Jacquod, *Global robustness versus local vulnerabilities in complex synchronous networks*, *Phys. Rev. E* **100**, 032303 (2019). [\[Link\]](#)

3. **M. Tyloo**, R. Delabays, P. Jacquod, *Noise-induced desynchronization and stochastic escape from equilibrium in complex networks*, *Phys. Rev. E* **99**, 062213 (2019). [\[\[Link\]\]](#)
2. **M. Tyloo**, T. Coletta, P. Jacquod, *Robustness of synchrony in complex networks and generalized Kirchhoff indices*, *Phys. Rev. Lett.* **120**, 084101 (2018). [\[\[Link\]\]](#)
1. R. Delabays, **M. Tyloo**, P. Jacquod, *The size of the sync basin revisited*, *Chaos* **27**, 103109 (2017). [\[\[Link\]\]](#)

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#### INVITED SPEAKER FOR INTERNATIONAL SEMINARS AND CONFERENCES

16. BMC-BAMC, mini-symposium on Oscillator Models in Biology, University of Exeter, Exeter, UK. *Resilience of synchronized networks to time-scale separation*. Jun. 25, 2025 [\[Link\]](#)
15. MathPhys Seminar, University of Applied Sciences of Western Switzerland, Sion, Switzerland. *Control of neurons*. Apr. 16, 2025 [\[Link\]](#)
14. Seminar ved Institutt for Fysikk, Norwegian University of Life Sciences, Ås, Norway. *Power grids: Energy transition, fluctuations and forced oscillations*. May. 2, 2024 [\[Link\]](#)
13. Graduate Seminar, Mechanical Engineering, University of New Mexico (UNM), Albuquerque, NM, USA. *Stability of synchronized Kuramoto networks*. Apr. 12, 2024 [\[Link\]](#)
12. Seminar at the Santa Fe Institute, Santa Fe, NM, USA. *Fluctuations in Complex Network-coupled Oscillators*. Sep. 11-16, 2023 [\[Link\]](#), [\[Video\]](#)
11. Dynamics Days, symposium on *Coupled phase oscillators: Fundamentals to applications in Brain and Power Grid*, Naples, Italy. *Disruption of Kuramoto oscillator networks*. Sep. 3-8, 2023 [\[Link\]](#)
10. Conclave on Complexity in Physical Interacting Systems, Computation and Thermodynamics, Santa Fe, NM, USA. *Tutorial on Synchronization*. Jul. 10-13, 2023 [\[Link\]](#)
9. Applied Math Brown Bag, University of Arizona, Tucson, AZ, USA. *Robustness of synchronous networks*. Apr. 17, 2023 [\[Link\]](#)
8. Prof. De Lellis group seminar, University of Naples Federico II, Naples, Italy. *Noise transmission and disruption in layered complex networks*. Nov. 14, 2022 [\[Link\]](#)
7. PhysCon2021, The 10th International Scientific Conference on Physics and Control, Fudan University, Shanghai, China. *Fault detection and probing in high-voltage power networks*. Oct. 4-8, 2021 [\[Link\]](#)
6. The 11th International Conference on Smart Grids, Green Communications and IT Energy-aware Technologies ENERGY 2021, Special Track on Modelling Dynamics of Power Grids (MoDyPoG). May 30-Jun.3, 2021 *Power grids: Small Signal Stability vs. Dynamical Parameters*. [\[Link\]](#)
5. Complexity in Energy Systems, satellite of Conference on Complex Systems (CCS) 2020, online conference. *The Key Player Problem in High-Voltage Power Networks*. Dec.9-10, 2020 [\[Video\]](#)
4. Seminar at the Institute of Physics, Humboldt University, Berlin. *Near Equilibrium Dynamics and Transitions in Complex Network-Coupled Systems*. Oct.17, 2019 [\[Link\]](#)
3. Dynamics Days Europe 2019, mini-symposium on Power Grids, Rostock, Germany. *The Key Player Problem in Realistic Large-Scale Power Grids*. Sep.2-6, 2019 [\[Link\]](#)
2. Seminar at the Whiting School of Engineering, Johns Hopkins University, Baltimore, MD, USA. *Quantifying Vulnerabilities of Complex Oscillatory Networks*. Aug.26-27, 2019 [\[Link\]](#)
1. Brown Bag Talk at the National Renewable Energy Laboratory (NREL), Golden CO, USA. *Quantifying Fragility of Network-Coupled Oscillators and Electric Power Grids with Resistance Distances*. Jan.14, 2019 [\[Link\]](#)

## INVITED SPEAKER FOR INTERNAL SEMINARS

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10. Exeter Brain Conference, University of Exeter, UK. Presentation. *Inference and control of networks of neurons*. Jun. 10, 2025 [\[Link\]](#)
9. MathBio Seminar, Living Systems Institute, University of Exeter, Exeter, UK. *Control of neurons – Ordinal patterns*. 2025 [\[Link\]](#)
8. Living Systems Institute Seminar, Living Systems Institute, University of Exeter, Exeter, UK. *Robustness of synchronized states in networked systems*. 2024
7. CNLS Postdoc Seminar, Center for Nonlinear Studies, Los Alamos National Laboratory, Los Alamos NM, USA. *Forced oscillations identification from partial PMU coverage in high-voltage grids*. Jan. 18, 2024
6. BLABS Seminar, T-4, Los Alamos National Laboratory, Los Alamos NM, USA. *Robustness of synchronous networks*. Apr. 24, 2023 [\[Link\]](#)
5. CNLS Postdoc Seminar, Center for Nonlinear Studies, Los Alamos National Laboratory, Los Alamos NM, USA. *Cyber and physical attacks on networked systems: the Byzantine generals problem and the energy transition*. Apr. 20, 2023
4. CNLS Postdoc Seminar, Center for Nonlinear Studies, Los Alamos National Laboratory, Los Alamos NM, USA. *Heavy-tailed distribution of the number of papers within scientific journals*. Oct. 20, 2022 [\[Link\]](#)
3. CNLS Postdoc Seminar, Center for Nonlinear Studies, Los Alamos National Laboratory, Los Alamos NM, USA. *More complexity for richer network dynamics*. Aug. 18, 2022 [\[Link\]](#)
2. BLABS Seminar, T-4, Los Alamos National Laboratory, Los Alamos NM, USA. *Fault detection and inference in networks of diffusively coupled dynamical agents*. Apr. 11, 2022 [\[Link\]](#)
1. CNLS Seminar, Center for Nonlinear Studies, Los Alamos National Laboratory, Los Alamos NM, USA. *Local vulnerabilities and global robustness of equilibrium in network-coupled systems*. Mar. 16, 2022 [\[Link\]](#)

## CONTRIBUTIONS TO CONFERENCES

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27. 4th International Summer Institute on Network Physiology (ISINP), Como, Italy. Participation. Jul. 27-Aug.1, 2025
26. NetSci2025, Maastricht, Netherlands. Poster. *Control of networks of neurons*. Jun. 2-6, 2025 [\[Link\]](#)
25. 15th International Conference on Complex Networks, Complenet 2024, Exeter, UK. Presentation. *Evolution of robustness of growing random networks*. Apr. 23-26, 2024 [\[Link\]](#)
24. 15th International Conference on Complex Networks, Complenet 2024, Exeter, UK. Poster. *Byzantine attacks on coupled phase oscillators*. Apr. 23-26, 2024 [\[Link\]](#)
23. Dynamics Days US, UC Davis, CA, USA. Presentation. *Cyber-physical attacks on coupled phase oscillators*. Jan. 8-10, 2024 [\[Link\]](#)
22. Conference on Complex Systems (CCS) 2023, Salvador, Brazil. Presentation. *Propagation of non-Gaussian noise in complex oscillatory networks and electric power grids*. Oct. 16-20, 2023 [\[Link\]](#)
21. Collective Intelligence: Foundations + Radical Ideas A Santa Fe Institute Symposium & Short Course, Santa Fe, NM, USA. Participation Jun. 20-22, 2023.
20. NASPI Work Group Meeting and Vendor Show, Tempe, AZ, USA. Poster. *Locating the source of forced oscillations in transmission grids*. Apr. 4-5, 2023 [\[Link\]](#)
19. APS March Meetings, Las Vegas, NV, USA. Poster. *Fluctuations in Layered Complex Networks*. Mar. 5-11, 2023 [\[Link\]](#)

18. APS March Meetings, Las Vegas, NV, USA. Presentation. *Locating the source of forced oscillations in complex oscillator networks and power grids*. Mar. 5-11, 2023 [\[Link\]](#)
17. 2023 Grid Science Winter School and Conference, Santa Fe, NM, USA. Poster. *Primary control effort and noise propagation in high-voltage power grids*. Jan.9-13, 2023 [\[Link\]](#)
16. Complex Networks 2022, The 11th International Conference on Complex Networks and their Applications, Palermo, Italy. Oral presentation. *Noise transmission in layered complex networks*. Nov.8-10, 2022 [\[Link\]](#)
15. 5th Workshop on Autonomous Energy Systems, NREL, Golden, CO, USA. Poster. *Primary control effort and noise propagation in high-voltage power grids*. Jul.13-15, 2022 [\[Link\]](#)
14. Necsys 22, Zürich, Switzerland. **Paper presentation**. *Propagation of non-Gaussian voltage angle fluctuations in high-voltage power grids*. Jul.5-7, 2022 [\[Link\]](#)
13. Necsys 22, Zürich, Switzerland. **Paper presentation**. *Locating high-frequency line disturbances with the frequency mismatch*. Jul.5-7, 2022 [\[Link\]](#)
12. Dynamics Days Europe, Nice, France. Talk. *Reconstructing Network Structures from Partial Measurements*. Aug.23-27, 2021 [\[Link\]](#)
11. Networks 2021: A Joint Sunbelt and NetSci Conference. Talk. *Periodic coupling inhibits second-order consensus on networks*. Jun.21-Jul.10, 2021 [\[Link\]](#)
10. 59th IEEE Conference on Decision and Control, online conference. **Paper presentation**. *Primary Control Effort in Realistic High-Voltage Power Networks*. Dec.14-18, 2020
9. Conference on Complex Systems (CCS) 2020, online conference. Talk. *The key player problem in complex oscillator networks*. Dec.7-11, 2020 [\[Video \(->16:59\)\]](#)
8. Digital Dynamics Days 2020 (DDD2020), online conference. Talk. *A Laplacian approach to stubborn agents and their role in opinion formation on influence networks*. Aug.22-27, 2020 [\[Video\]](#)
7. Geometry of Complex Webs International Minicourse and Exploratory Workshop (GeoCow), Les Diablerets. Poster. *Coupled Oscillators vs. Opinion Formation*. Feb.2-5, 2020 [\[Link\]](#)
6. Future Electric Power Systems and the Energy Transition, 2nd International conference in Champéry, Switzerland. Oral presentation. *Resistance Centralities Identify Local Vulnerabilities in Electric Power Grids*. Feb.3-8, 2019 [\[Link\]](#)
5. 2019 Grid Science Winter School & Conference, Santa Fe NM, USA. Poster. *Robustness of Synchrony in Complex Networks, Generalized Kirchhoff Indices and Resistance Centralities*. Jan.7-11, 2019 [\[Link\]](#)
4. International School on Informatics and Dynamics in Complex Networks, University of Catania, Italy. Oral presentation. *Robustness of Synchrony in Complex Networks and Generalized Kirchhoff Indices*. **Best Presentation Award**. Oct.15-19, 2018 [\[Link\]](#)
3. Dynamics Days Europe 2018, Loughborough, England. Sep.3-7, 2018
2. 661. WE-Heraeus-Seminar: Nonlinear Dynamics, Optimization and Control of Distributed Energy Systems, Physikzentrum Bad Honnef, Germany. Poster. *Robustness of Synchrony in Electrical Grids and Generalized Kirchhoff Indices*. Jan.29-31, 2018 [\[Link\]](#)
1. Future Electric Power Systems and the Energy Transition, International conference in Champéry, Switzerland. Poster. *Numerical method to determine different power flow solutions*. Feb.5-9, 2017

## VISITS IN RESEARCH GROUPS AND INSTITUTIONS

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12. University of Applied Sciences of Western Switzerland. Visiting researcher (Prof. R. Delabays). Apr. 16-18, 2025
11. Norwegian University of Life Sciences. Visiting researcher (Prof. L. Rydin). Apr. 29-May.3, 2024
10. Mechanical Engineering, University of New Mexico, Albuquerque, NM, USA. Visiting researcher (Prof. F. Sorrentino). Feb. 16, 2024
9. Santa Fe Institute, Santa Fe, NM, USA. Visiting researcher (Dr. Y. Zhang). Sep. 11-16, 2023
8. School of Engineering, University of Applied Sciences of Western Switzerland, Sion, Switzerland. Visiting researcher (Prof. P. Jacquod). Aug. 28-Sep. 1, 2023
7. Program in Applied Mathematics, University of Arizona, Tucson, AZ, USA. Visiting researcher (Dr. L. Pagnier, Prof. M. Chertkov). Apr. 12-19, 2023
6. Department of Electrical Engineering and Information Technology, University of Naples Federico II, Naples, Italy. Visiting researcher (Prof. De Lellis). Nov. 14-15, 2022
5. Statistical Physics and Nonlinear Dynamics & Stochastic Processes Group, Humboldt University, Berlin. Visiting researcher (Dr. F. Baumann, Prof. I.M. Sokolov). Sep. 6-11, 2019
4. Whiting School of Engineering, Johns Hopkins University, Baltimore, MD, USA. Visiting researcher (Profs. D. Gayme and E. Mallada). Aug. 26-27, 2019
3. Los Alamos National Laboratory (LANL), Theoretical Division T-5 and CNLS, Los Alamos, NM, USA. Invited researcher. Jul.-Aug., 2019
2. Center for Control, Dynamical Systems and Computation, University of California, Santa Barbara (UCSB). Visiting researcher (Prof. F. Bullo). Jan. 16-18, 2019
1. National Renewable Energy Laboratory (NREL), Golden, CO, USA. Visiting researcher (Dr. M. Colombino). Jan. 14-15, 2019