Xiaozhu Zhang 张潇竹

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Born in March 1985, Shanghai, China

Research Experiences

TECHNICAL UNIVERSITY OF DRESDEN | Post-doctoral researcher

Feb 2018 – Present | Dresden, Germany

- **Research Focus**: complex networks, nonlinear dynamics, Kuramoto oscillator model, linear response theory, network resonances, perturbation spreading, pattern formation on networks

Education

MPI FOR DYNAMICS & SELF-ORGANIZATION | Dr. rer. nat. in physics

May 2014 – Jan 2018 | Göttingen, Germany

- graduated with honor *magna cum laude*
- Supervisor: **Prof. Dr. Marc Timme**
- **Thesis**: Dynamic Responses of Networks under Perturbations: Solutions, Patterns, and Predictions

GEORG-AUGUST-UNIVERSITY GÖTTINGEN | M. Sc. in Physics

Oct 2011 – Nov 2013 | Göttingen, Germany

- Graduated with *Distinction*
- Supervisor: **Prof. Dr. Sarah Hallerberg**
- **Thesis**: Statistics, Predictability and Dynamics of Critical Transitions

GEORG-AUGUST-UNIVERSITY GÖTTINGEN | B. Sc. in Physics

Oct 2008 – Sep 2011 | Göttingen, Germany

- Supervisor: **Prof. Dr. Jan Nagler**
- **Thesis**: Impact of Stochastic Delays in Extremal Evolutionary Dynamics

FUDAN UNIVERSITY | B. Sc. in Optical Information Science and Engineering

Sep 2003 – June 2007 | Shanghai, China

- Supervisor: **Prof. Dr. Jun Zhuang**
- **Thesis**: The Dynamical Behavior of a Single Ad-atom in the Self-Diffusion on Ag(001) Surfaces

Publications

SELECTED PUBLICATIONS

[1] **Xiaozhu Zhang***, Sarah Hallerberg, Moritz Matthiae, Dirk Witthaut, and Marc Timme*. Fluctuation-induced distributed resonances in oscillatory networks. *Science Advances*, 5(7):eaav1027, 2019.

[2] **Xiaozhu Zhang***, Dirk Witthaut, and Marc Timme*. Topological determinants of perturbation spreading in networks. *Physical Review Letters*, 125:218301, 2020.

[3] **Xiaozhu Zhang***, Cheng Ma, and Marc Timme*. Vulnerability in dynamically driven oscillatory networks and power grids. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 30(6):063111, 2020.

[4] **Xiaozhu Zhang***, Christian Kuehn*, and Sarah Hallerberg*. Predictability of critical transitions. *Physical Review E*, 92(5):052905, 2015.

[5] **Xiaozhu Zhang***, Kristian Hantke, Cornelius Fischer*, and Matthias Schröter*. Performance of polarization-based stereoscopy screens. *3D Research*, 3(4):4, 2012.

OTHER PUBLICATIONS

[6] Malte Schroeder, **Xiaozhu Zhang**, Justine Wolter, and Marc Timme. Dynamic perturbation spreading in networks. *IEEE Transactions on Network Science and Engineering*, pages 1–1, 2019.

[7] Dirk Witthaut, Martin Rohden, **Xiaozhu Zhang**, Sarah Hallerberg, and Marc Timme. Critical links and nonlocal rerouting in complex supply networks. *Physical Review Letters*, 116(13):138701, 2016.

[8] Benjamin Schäfer, Moritz Matthiae, **Xiaozhu Zhang**, Martin Rohden, Marc Timme, and Dirk Witthaut. Escape routes, weak links, and desynchronization in fluctuation-driven networks. *Physical Review E*, 95(6):060203, 2017.

[9] Debsankha Manik, Martin Rohden, Henrik Ronellenfitsch, **Xiaozhu Zhang**, Sarah Hallerberg, Dirk Witthaut, and Marc Timme. Network susceptibilities: Theory and applications. *Physical Review E*, 95(1):012319, 2017.

[10] Mehrnaz Anvari, Frank Hellmann, and **Xiaozhu Zhang**. Introduction to focus issue: Dynamics of modern power grids. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 30(6):063140, 2020.

[11] Justine Wolter, Benedict Lünsmann, **Xiaozhu Zhang**, Malte Schröder, and Marc Timme. Quantifying transient spreading dynamics on networks. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 28(6):063122, 2018.

[12] Zhiyi Lv, Jan Rosenbaum, Stephan Mohr, **Xiaozhu Zhang**, Deqing Kong, Helen Preiß, Sebastian Kruss, Karen Alim, Timo Aspelmeier, and Jörg Großhans. The emergent yo-yo movement of nuclei driven by cytoskeletal remodeling in pseudo-synchronous mitotic cycles. *Current Biology*, 30(13):2564 – 2573.e5, 2020.

Professional Services

EDITORIAL SERVICE

- Guest editor: Focus Issue *"Dynamics of Modern Power Grids"* of Chaos: An Interdisciplinary Journal of Nonlinear Science

REVIEWER FOR JOURNAL ARTICLES

- Chaos: An Interdisciplinary Journal of Nonlinear Science
- NetSciCom 2017: 9th IEEE International Workshop on Network Science for Communication Network
- APVC 2019: The 18th Asia-Pacific Vibration Conference

Teaching Experiences

2019	TU Dresden	**Lecturer** of *Physics of Sustainability*
2015	Uni. Göttingen	**Organizer** of *Practical Course on Network Science*
2015	Uni. Göttingen	**Organizer** of *Seminar on Network Science*
2014	Uni. Göttingen	**Teaching assistant** of lecture *Network Dynamics*

Languages

PROGRAMMING

Good: C • C++ • Mathematica • LaTeX• Gnuplot
Basic: Matlab • Python

SPOKEN & WRITTEN

Native/Proficient: Chinese • English (IELTS: 7.0)
Reading knowledge: German

Awards

2014 **Excellence Fellowship** of the International Max Planck Research Schools for Physics of Biological and Complex Systems

Conferences & Workshops

2021 **The 10th International Scientific Conference on Physics and Control** | online
- **talk** *"Predicting Risks in Fluctuation Driven Power Grids"*

2021 **The Sixth International Young Researchers' Forum at Tongji University - Physics Session** | online
- **talk** *"Dynamic Response Theory of Complex Networks and Applications in Electrical Power Systems"*

2021 **2021 Edition of International Young Scientists' Forum at East China Normal University - The Second International Young Researchers' Forum on Advanced Physics, Electronics and Precision Spectropy** | online
- **talk** *"Dynamic Responses of Complex Networks"*

2020 **Lecture Series of Systems Sciences (No.11), Huaqiao University China** | online
- **invited talk** *"Dynamic Response Patterns of Complex Networks and Power Grids"*

2020 **"Complexity in Energy Systems" - Conference on Complex Systems 2020 Satellite** | online
- **invited talk** *"Topological Determinants of Perturbation Spreading in Networks and Power Grids"*

2020 **Satellite conference of LT29 "Localisation 2020: Anderson Localisation and Related Topics"** | online
- **poster** *"Localized vs. Delocalized Responses in Fluctuation-driven Networks"*

2019 **Focus-workshop "Collective Nonlinear Dynamics of Complex Power Grid Networks"** | Dresden, Germany
- **Scientific Organizer**
- **invited talk** *"Predictability of Frequency Excursions in Fluctuation-driven Power Grids"*

2019 **Workshop "Inverter Technology"** | Goslar, Germany

2019 **jDPG Symposium "Theoretical Physics of Complex Systems und Networks"** | Dresden, Germany
- **invited talk** *"Power Grids as complex networks"*

2018 **Colloquium "Irregular Engineering Oscillations and Signal Processing"** | Hamburg, Germany
- **talk** *"Localization and Distributed Dynamic Resonances in Oscillatory Networks and Power Grids"*

2018 **Dynamic Days Europe** | Loughborough, UK
- **Organizer** of minisymposium "Structure and dynamics of future energy systems: power grids as complex dynamical systems"
- **talk** *"Transient Dynamics of Perturbation Spreading in Oscillatory Networks and Power Grids"*

2018 **DPG (German Physical Society) Spring Meeting** | Berlin, Germany
- **talk** *"Perturbation spreading in Diffusively-coupled Networks and Power Grids"*

2017 **Conference "Dynamics in Power Systems –from Science to Industry"** | Potsdam, Germany
- **poster** *"Perturbation Spreading in Oscillatory Networks and Power Grids"*

2017 **The 1st China Systems Science Conference 2017** | Beijing, China
- **talk** *"Dynamic Response Patterns of Oscillatory Networks and Power Grids"*

2017 **DPG (German Physical Society) Spring Meeting** | Dresden, Germany
- **talk** *"Response Patterns for Fluctuations in Complex Oscillator Networks"*

2016 **Conference "Complex Networks: from Theory to Interdisciplinary Applications"** | Marseille, France
- **poster** *"Dynamic Response Pattern in Oscillatory Networks and Power Grids"*

2016 **Lake Como School of Advanced Studies "Complex Networks: Theory, Methods and Applications"** | Como, Italy

2015 **Workshop "Energy Scenario and Secure Electricity Supply - Role of Electricity Grid"** | Jülich, Germany
- **talk** *"Steady Response Patterns to Perturbations in Power Grids"*

2015 **DPG (German Physical Society) Spring Meeting** | Berlin, Germany
- **talk** *"Predicting Critical Links in Complex Supply Networks"*

2014 **Symposium "Future Energy Systems: Collective Dynamics and Self-Organization of Power Grids"** | Göttingen, Germany
- **talk** *"From Perturbations to Instabilities in Power Grids"*

2013 **DPG (German Physical Society) Spring Meeting** | Regensburg, Germany
- **talk** *"Statistics, Predictability and Dynamics of Critical Transitions"*