

Xiaozhu Zhang 张潇竹

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Born in March 1985, Shanghai, China



Research Experiences

TONGJI UNIVERSITY | ASSOCIATE PROFESSOR (TENURE TRACK)

Feb 2022 – Present | Shanghai, China

TECHNICAL UNIVERSITY OF DRESDEN | POST-DOCTORAL RESEARCHER

Feb 2018 – 2021 | Dresden, Germany

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, Nov 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*** and Marc Timme. Fluctuation response patterns of network dynamics –an introduction. *European Journal of Applied Mathematics*, page 1–38, 2022.
- [5] **Xiaozhu Zhang***, Christian Kuehn*, and Sarah Hallerberg*. Predictability of critical transitions. *Physical Review E*, 92(5):052905, 2015.
- [6] **Xiaozhu Zhang***, Kristian Hantke, Cornelius Fischer*, and Matthias Schröter*. Performance of polarization-based stereoscopy screens. *3D Research*, 3(4):4, 2012.

OTHER PUBLICATIONS

- [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] 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.
- [11] 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.
- [12] 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.
- [13] 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.

- [14] Moritz Thümmler, **Xiaozhu Zhang**, and Marc Timme. Absence of pure voltage instabilities in the third-order model of power grid dynamics. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 32(4):043105, 2022.
- [15] Zhiyi Lv, Na Zhang, **Xiaozhu Zhang**, Jörg Großhans, and Deqing Kong. The Lateral Epidermis Actively Counteracts Pulling by the Amnioserosa During Dorsal Closure. *Front. Cell Dev. Biol.*, 10:865397, may 2022.

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 <i>Physics of Sustainability</i>
2015	Uni. Göttingen	Organizer of <i>Practical Course on Network Science</i>
2015	Uni. Göttingen	Organizer of <i>Seminar on Network Science</i>
2014	Uni. Göttingen	Teaching assistant of lecture <i>Network Dynamics</i>

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

- 2022 NetSci2022 | online
- Chair of Session Dynamics I
 - talk *“Emerging Complexity in Collective Dynamic Responses of Networked Systems”*
- 2022 NetSci2022 Satellite-PowerNet2022 | online
- Organizer and Session Chair
- 2022 Workshop “Intelligent Machines? –Self-Organized Nonlinear Dynamics of Machines across Scales” | online
- talk *“Self-organized Collective Dynamics of Power Grids”*
- 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 Spectroscopy | 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*”