

Dr. Johannes Falk

Curriculum Vitae

Name	Dr. Johannes Falk
ResearchID	 https://orcid.org/0000-0001-8496-6221
Date of birth	17.11.1989
Nationality	German

ACADEMIC APPOINTMENTS AND RESEARCH EXPERIENCE

2022 – Present	Postdoctoral Researcher (Industry-Funded) Constructor University Bremen. Secured industry-funded contract extensions through demonstrated project success
August 2023 – January 2024	Interim Lecturer (Computational Systems Biology) Constructor University Bremen
2019 – 2022	Postdoctoral Researcher (Industry-Funded) Constructor University Bremen. Initial 3-year term.

EDUCATION

Jan 2019	PhD in Physics Institute of Solid State Physics Technical University of Darmstadt, Germany Thesis (English Translation): <i>Stochastic Models and Environmental Effects in the Context of Synthetic Biology</i> Supervisor: Prof. Dr. Barbara Drossel
2014	Master of Science (Physics) Julius Maximilian University Würzburg, Germany
2013	Master of Physics with Honours of the First Class Heriot-Watt University Edinburgh, Scotland

TEACHING AND MENTORING

Lecturer	Computational Systems Biology (Fall Semester 23/24)
Teaching Assistant / Tutor:	Statistical Physics, Electrodynamics, Experimental Physics, Computational Physics, Error analysis
Student Mentoring	Supervision of 5 theses: 1 Master's thesis and 4 Bachelor's theses in Theory of Complex Systems.

PEER RECOGNITION

Recent Prizes, Awards, and Competitive Success

- March 2025 First place in the Bremen Big Data Challenge (**Team Leader**, three-person team)
Press release: constructor.university/news/beyond-black-boxes-constructor-university-wins-big-data-challenge-transparent-fraud-detection)
- August 2024 First place in the PEGS DREAM Challenge (**Team Leader**, six-person team)
Press release: constructor.university/news/researchers-constructor-university-win-prestigious-pegs-dream-challenge-groundbreaking-work
- March 2024 First and second place in the Bremen Big Data Challenge (**Team Leader**, three-person team)

Invited Talks

- 2021 Invited Talk at the SPiCy seminar, organized by Prof. K. Sznajd-Weron;
Wrocław University of Science and Technology, Poland
Title: *Collective patterns and stable misunderstandings in networks striving for consensus without a common value system*
- 2023 Invited Talk at the spring conference of Deutsche Physikalische Gesellschaft (DPG),
Symposium Dynamics of Opinion Formation;
Dresden University of Technology
Title: *Collective patterns and stable misunderstandings in networks striving for consensus without a common value system*
- 2023 Invited Talk at the workshop *Networks: a language for understanding complex systems*;
HIAS - Hamburg Institute for Advanced Study
Title: *How networks help physicists to model social systems*
- 2024 Invited Talk at the LLM & Beyond reading group;
University of Illinois Urbana-Champaign, USA
Title: *Polycontextural Logic: Introduction, Investigations, Applications*
- 2024 Invited Talk at the RSGDREAM 2024 conference;
University of Wisconsin, USA
Title: *The results of the Team SpiderBobs for the PEGS Dream Challenge*

Reviewing Activities

- Since 2016 Reviewer for: PlosOne, Journal of Theoretical Biology, Royal Society Open Science, International Journal of Modern Physics B, Physica D, Advances in Complex Systems, Scientific Reports, Cognitive Computation, AI & SOCIETY

Organization of Scientific Meetings

- 2017 Main Organizer, Symposium “Computer-aided Engineering of Synthetic Genetic Circuits”, TU Darmstadt, Germany.

University Service

- 2016 – 2019 PhD student representative in the interdisciplinary CompuGene project; TU Darmstadt (Represented ~18 researchers).

Publications

- Akhtari, F. S., Falk, J., Jyoti, J., Voutsas, V., Cakir, E., Salehzadeh-Yazdi, A., Hütt, M.-T., Lussana, A., Marotta, F., Ginsburg, G. S., et al. (2026). The pegs dream challenge: A crowdsourcing approach to understanding hypercholesterolemia with multi-dimensional genomic and environmental data.
- Falk, J. (2019). *Stochastische modelle und umgebungseffekte im kontext der synthetischen biologie* [Doctoral dissertation].
- Falk, J., Bronstein, L., Hanst, M., Drossel, B., & Koepl, H. (2019). Context in synthetic biology: Memory effects of environments with mono-molecular reactions. *The Journal of Chemical Physics*, 150(2).
- Falk, J., Eichler, E., Windt, K., & Hütt, M.-T. (2022a). Collective patterns and stable misunderstandings in networks striving for consensus without a common value system. *Scientific Reports*, 12(1), 3028.
- Falk, J., Eichler, E., Windt, K., & Hütt, M.-T. (2022b). Physics is organized around transformations connecting contextures in a polycontextural world. *Foundations of Science*, 27(3), 1229–1251.
- Falk, J., Eichler, E., Windt, K., & Hütt, M.-T. (2024a). Nucleation transitions in polycontextural networks toward consensus. *The European Physical Journal B*, 97(11), 187.
- Falk, J., Eichler, E., Windt, K., & Hütt, M.-T. (2024b). Structural insulators and promoters in networks under generic problem-solving dynamic. *Advances in Complex Systems*, 26(7 & 8).
- Falk, J., Mendler, M., & Drossel, B. (n.d.). A minimal model of burst-noise induced.
- Falk, J., Mendler, M., & Drossel, B. (2017). A minimal model of burst-noise induced bistability. *PloS one*, 12(4), e0176410.
- Falk, J., Mendler, M., & Kabisch, J. (2022c). Pipette show: An open source web application to support pipetting into microplates. *ACS Synthetic Biology*, 11(2), 996–999.
- Falk, J., Winkler, M., & Kinzel, W. (2015). On the effect of the drive on self-organized criticality. *Journal of Physics A: Mathematical and Theoretical*, 48(40), 405003.
- Hofmann, A., Falk, J., Prangemeier, T., Happel, D., Köber, A., Christmann, A., Koepl, H., & Kolmar, H. (2019). A tightly regulated and adjustable crispr-dcas9 based and gate in yeast. *Nucleic acids research*, 47(1), 509–520.
- Kohl, T., & Falk, J. (2020). Knowledge objects of synthetic biology: From phase transitions to the biological switch. *Journal for General Philosophy of Science*, 51(1), 1–17.
- Mendler, M., Falk, J., & Drossel, B. (2018). Analysis of stochastic bifurcations with phase portraits. *PloS one*, 13(4), e0196126.
- Nyczka, P., Falk, J., & Hütt, M.-T. (2022). Network location and clustering of genetic mutations determine chronicity in a stylized model of genetic diseases. *Scientific Reports*, 12(1), 19906.
- Rumiantsau, D., Falk, J., Nyczka, P., & Hütt, M.-T. (2025). Categories of important edges in dynamics on graphs. *Royal Society Open Science*, 12(4).