

Energy Information Networks & Systems, Prof. Dr. Florian Steinke

Topic: Comparing the Resilience of Different Kinds of Network Models

The Energy Information Networks & Systems lab develops and explores algorithms for the control of complex networks, with a special focus on power networks and resilience. In this realm we want to take a deeper dive into methodological differences and commonalities between continuous network models, i.e., differential equations, and discrete network models, e.g. petri nets. Both types of models are commonly used to describe networked infrastructure. Yet, the type of vulnerabilities in case of distortions are qualitatively very different at first sight (dynamic instability vs. dead lock). What can we learn from comparing these two models and their reaction to external shocks? Can we transfer knowledge and algorithms from one domain to the other and vice versa?

Requirements:

Very good Master's degree in engineering, natural or computer sciences, or mathematics

- Strong mathematical interest and capabilities: formal modeling, theorem proving
- Experience with control systems beneficial, but not a must
- Interest in translating between formal research and challenges in the practical domain

If you have any questions about the technical topic or organizational boundary conditions, please contact Prof. Dr. Florian Steinke (Florian.Steinke@eins.tu-darmstadt.de).