

# LABORATORY FOR SAFETY ANALYSIS

Prof. Dr. Wolfgang Kröger

**Safety and Reliability Engineering gains in importance due to the increasing complexity of machines and networked systems and the broadened spectrum of failure modes, hazards and threats.**

## Core research

Our research focuses on the modeling, the simulation, and the optimization of complex technical systems with regard to reliability, vulnerability and risk. We further develop suitable methods and tools to meet current requirements and future challenges to system design and operation.

## Projects

- Improving the protection of critical infrastructures, e.g. for
  - Energy generation and supply
  - Transportation by rail and road
  - Information & communication (ICT),in collaboration with the Swiss Federal Office for Civil Protection.
- Agent-based modeling of the failure propagation in complex engineered systems, in collaboration with swisselectric research.

- Balancing safety and availability for the LHC Machine Protection Systems, in collaboration with CERN, Geneva.
- Modeling of the interactions between meshed networks with emphasis on pervasive use of ICT for their control.

## Education

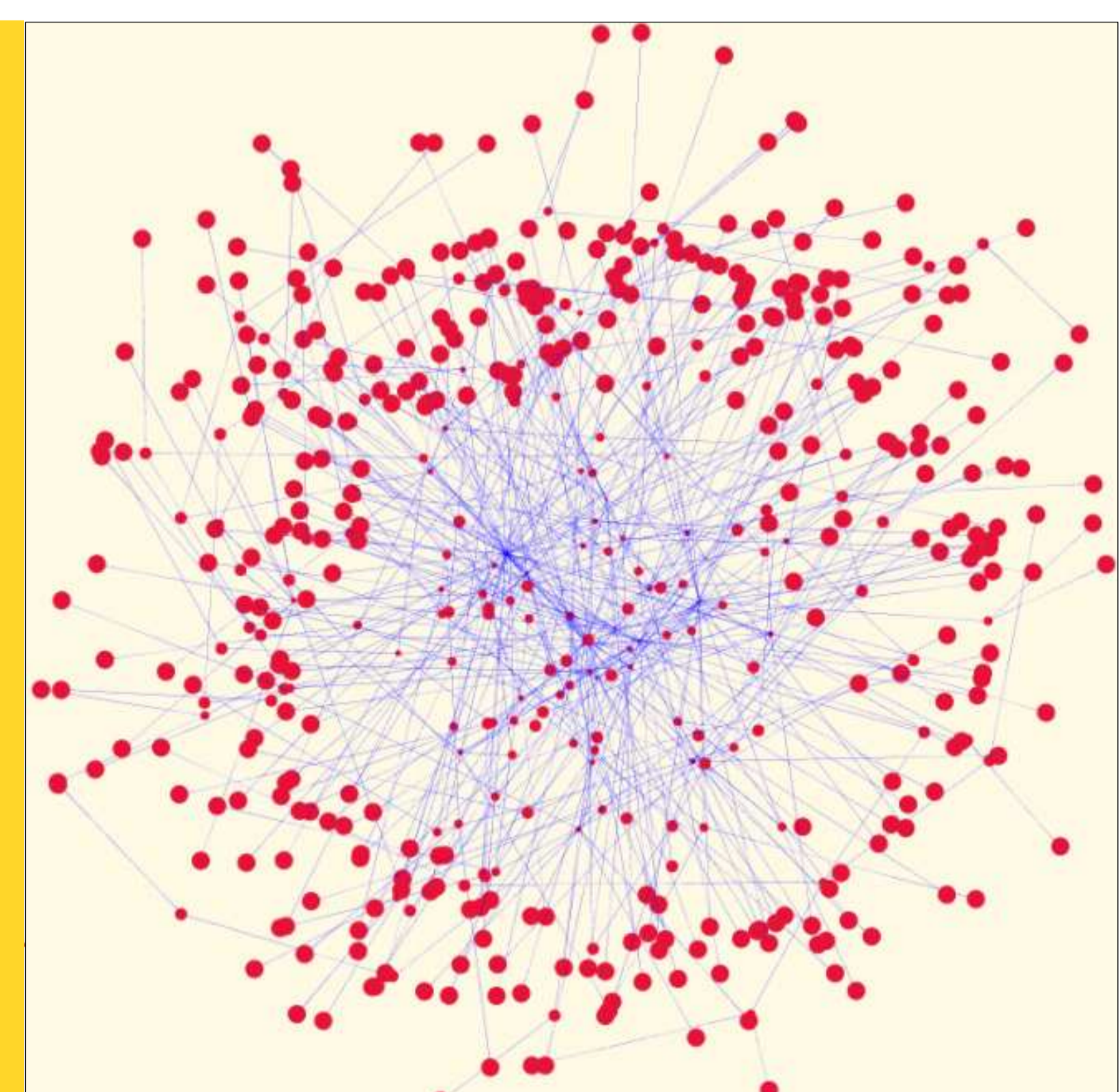
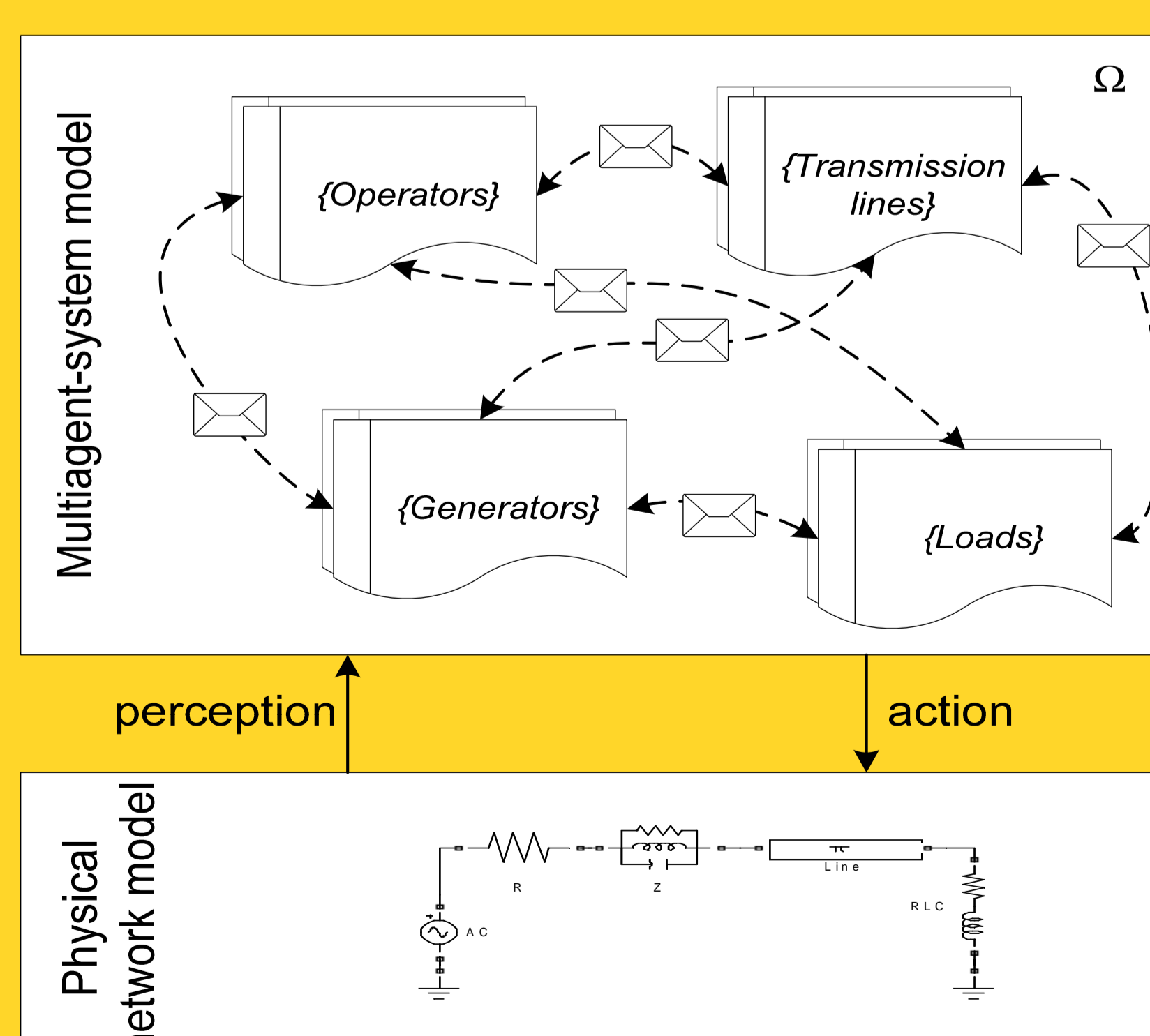
The lectures provide a profound understanding and introduce a problem-oriented application of analytical methods and tools for reliability and risk engineering.

Bachelor in Mechanical Engineering:

- Ingenieur-Tool V: Simulation von Systemausfällen mit Anylogic

Master in Mechanical Engineering/ in Energy Science and Technology:

- Reliability of Technical Systems
- Risk Analysis of Highly-integrated Systems
- Safety of Nuclear Power Plants



**ETH**

Eidgenössische Technische Hochschule Zürich  
Swiss Federal Institute of Technology Zurich