## Abstract:

How to ensure that critical infrastructures, like power plants, transportation systems, data centers, and medical devices work safely and reliably? That is the topic of risk management, and fault tree analysis (FTA) is a very prominent technique here. FTA comprises a variety of methods and is very popular in practice, being deployed by many companies, like NASA, ESA, Honeywell, Airbus, Toyota, etc.

This tutorial addresses how fault trees can be used to model and analyze dependability aspects of complex systems: I will give an introduction to the most common quantitative and qualitative analysis techniques, their practical relevance and deployment in practice. Moreover, I will illustrate how formal methods help to increase the modeling and analytical power of FTA. I will end by discussing fault tree extensions, as well as current research directions in FTA.