

# EINLADUNG

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Referent: Dipl.-Inform. Martin Neuhäuser,  
RWTH Aachen University

Titel: Model Checking Nondeterministic and Randomly  
Timed Systems

## Abstract:

Quantitative model checking has become an indispensable tool to analyze performance and dependability characteristics such as the expected round trip time in a packet switched network or the failure probability of a safety-critical system.

So far, the existing model checking techniques lack support for models which combine stochastic timing and nondeterminism. This is surprising, as nondeterminism is the key for compositional modeling and occurs naturally in distributed systems.

In this talk, we overcome this limitation. More precisely, we consider continuous-time Markov decision processes (CTMDPs), a model which closely entangles stochasticity and nondeterminism. Our main contribution is a discretization which allows to compute the maximum and minimum probability to enter a set of goal states in a CTMDP within a given time-bound.

By applying value iteration techniques to the induced discrete-time model, we compute the desired probabilities up to an a priori specified precision.

This result provides the basis for model checking important performance and dependability characteristics and has been extended to a variety of other nondeterministic and randomly timed system models.

Es laden ein: Die Dozenten der Informatik