A U S H A N G

FREIE UNIVERSITÄT BERLIN

Fachbereich Mathematik und Informatik

Promotionsbüro, Arnimallee 14, 14195 Berlin

D I S P U T A T I O N

Freitag, 14. Juni 2019, 10:00 Uhr

Ort: Seminarraum 130

(Fachbereich Mathematik und Informatik, Arnimallee 3, 14195 Berlin)

Disputation über die Doktorarbeit von

Herrn Robert Schwieger

Thema der Dissertation:

Combining Boolean Networks and Ordinary Differential Equations for Analysis and Comparison of Gene Regulatory Networks

Thema der Disputation:

Dynamically consistent reduction of Boolean networks

Die Arbeit wurde unter der Betreuung von **Prof. Dr. S. Röblitz & Prof. Dr. H. Siebert** durchgeführt.

Abstract:
Massive data generation results in the delineation of increasingly complex regulatory networks involved in the control of numerous biological processes. As a consequence, in many instances models of such systems become too large to be analyzed by conventional methods. Across all modeling formalisms model reduction plays therefore a decisive role in the analysis of large regulatory networks. Among them, due to their simplicity, Boolean models play a major role. In such models, the components are characterized by a binary (ON or OFF) variable. For large systems, despite their simplicity the exponential dependence of the size of the state space on the number of components of these models makes analysis by simulation infeasible.
This disputation talk will present and compare different automated reduction methods for Boolean models. We will discuss what dynamical properties of the original models are conserved during the reduction. We will focus on different types of attractors and conditions for their conservation.

Die Disputation besteht aus dem o. g. Vortrag, danach der Vorstellung der Dissertation einschließlich jeweils anschließenden Aussprachen.

Interessierte werden hiermit herzlich eingeladen

Die Vorsitzende der Promotionskommission
Prof. Dr. H. Siebert