

## FREIE UNIVERSITÄT BERLIN Fachbereich Mathematik und Informatik

Promotionsbüro, Arnimallee 14, 14195 Berlin

# DISPUTATION

**Donnerstag, 29. Juni 2017, 15.15 Uhr**

**Ort: Raum 140, Arnimallee 3, 14195 Berlin**

**Disputation über die Doktorarbeit von**

**Herrn Hannes Stuke**

**Thema der Dissertation:  
Blow-up in complex time**

**Thema der Disputation:  
Probabilistic Influence in Bayesian networks**

Die Arbeit wurde unter der Betreuung von **Prof. Dr. B. Fiedler** durchgeführt.

**Abstract:** Abstract: In my talk I will give an introduction of Bayesian networks. Bayesian networks are directed acyclic graphs that represent probabilistic relationships between huge number of random variables. For example, they are applied in medicine to assist diagnosis, in biology to analyse gene expression networks, to detect production faults in manufacturing processes and in many other fields.

An important property of random variables is conditional independence, i.e., can variables behave independently if we have extra knowledge about random variables elsewhere in the graph. Conditional independence not only helps to structure data, but also to derive possible graphs from a raw data set.

We will show that if the set where we have this additional information separates two nodes in the graph in a certain way, then these nodes are conditionally independent. We will also discuss a converse statement which holds under generic conditions.

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

**Interessierte werden hiermit herzlich eingeladen**

Der Vorsitzende der Promotionskommission  
Prof. Dr. B. Fiedler