

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, 28. Februar 2020, 09:00 Uhr

Ort: Seminarraum 108/109

(Fachbereich Mathematik und Informatik, Arnimallee 6, 14195 Berlin)

Disputation über die Doktorarbeit von

Herrn Stefan Rüdric

Thema der Dissertation:

Random Walk Approaches to Clustering Directed Networks

Thema der Disputation:

Evolving Complex Networks in Non-extensive Statistical Mechanics

Die Arbeit wurde unter der Betreuung von **Prof. Dr. C. Schütte** durchgeführt.

Abstract:

In theory, the physical background of seismic events is well understood. But despite intensive research in this field and growing understanding of plate tectonics, it is not yet feasible to predict where and when high-magnitude earthquakes will occur. Thanks to a global network of increasingly sensitive seismographs, we do have access to a large quantity of observation data that has allowed to statistically derive empirical rules on their occurrence, most prominently the laws of Gutenberg-Richter and Omori.

S. Abe and N. Suzuki described a method of mapping seismic data to monotonously growing graphs matching the model of scale-free evolving networks introduced by A.-L. Barabási and R. Albert. Networks generated in this manner exhibit a q -exponential distribution of vertex degrees that is known to optimize a generalized notion of entropy proposed by C. Tsallis, which gave rise to non-extensive statistical mechanics.

During this talk, I will show how to build networks from seismic data published by the Southern California Earthquake Center, discuss their dependence on a free parameter and structural properties these networks share with selected real-world networks from biology or social sciences.

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. C. Schütte