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, 15. Juli 2016, 10.00 Uhr

Ort: Raum 108/109, Arnimallee 6, 14195 Berlin

Disputation über die Doktorarbeit von

Herrn Tomasz Badowski

Thema der Dissertation:

Adaptive importance sampling via minimization of estimators of cross-entropy, mean square, and inefficiency constant

Thema der Disputation:

Adaptive multilevel splitting

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

Abstract: Estimation of rare events is important among others in reliability analysis and molecular dynamics.
Estimating rare events by Monte Carlo method can be inefficient because the number of samples needed to achieve a given relative error can be prohibitively large. In this talk I will discuss adaptive multilevel splitting (AMS), which is a technique for reducing the variance and improving the efficiency of rare event estimation. I will focus on recent results about the unbiasedness of AMS for computing expectations of functions of trajectories of Markov chains, like Euler scheme discretizations of diffusions. I will describe some variants of the AMS method which lead to unbiased estimators, outline the proof of unbiasedness, and discuss recommendations for the choices of different parameters of the method.
Finally, I will describe how the method can be used for computing mean transition times from a one metastable state to another in molecular dynamics.

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. Chr. Schütte