

In der Reihe „Chemnitzer Mathematisches Colloquium“ der Fakultät für Mathematik der TU Chemnitz spricht

Herr Prof. Dr. Michael Nussbaum (Cornell University)

über das Thema

**Local Asymptotic Equivalence of Pure Quantum States Ensembles
and Quantum Gaussian White Noise.**

Der Vortrag findet am

Donnerstag, dem 15. Juni 2017, um 16.00 Uhr, im Raum B202, Reichenhainer Straße 70

statt.

Ich möchte Sie hiermit recht herzlich zu dieser Veranstaltung einladen. Das Kolloquium wird von Frau Dr. Szkoła geleitet.

Abstract:

Quantum technology is increasingly relying on specialized statistical inference methods for analyzing quantum measurement data. This motivates the development of quantum statistics, a field that is shaping up at the overlap of quantum physics and classical statistics. One of the less investigated topics to date is that of statistical inference for infinite dimensional quantum systems, which can be seen as quantum counterpart of non-parametric statistics. We analyze the asymptotic theory of quantum statistical models consisting of ensembles of quantum systems which are identically prepared in a pure state. In the limit of large ensembles we establish the local asymptotic equivalence of this i.i.d. model to a quantum Gaussian white noise model. We use this to establish minimax rates for the estimation of pure states belonging to Hermite-Sobolev classes of wave functions. Moreover, for quadratic functional estimation of the same states we note an elbow effect in the rates, whereas for testing a pure state a sharp parametric rate is attained over the nonparametric Hermite-Sobolev class. This talk is based on joint research with C. Butucea and M. Guta.

Prof. Dr. Christoph Helmberg
Dekan

