

FREIE UNIVERSITÄT BERLIN

Fachbereich Mathematik und Informatik

Promotionsbüro, Arnimallee 14, 14195 Berlin

DISPUTATION

Freitag, 11. März 2022, 15:00 Uhr

[WebEx](#)

Disputation über die Doktorarbeit von

Herrn Mattes Mollenhauer

Thema der Dissertation:

On the statistical approximation of conditional expectation operators

Thema der Disputation:

Perturbation theory of linear operators in machine learning and statistics

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

Abstract: The perturbation of spectral properties of linear operators is a classical topic in functional analysis. Although its inception in the early 20th century was mostly driven by the developments in quantum mechanics, it grew into a theoretical discipline in its own right. Since then, it has greatly influenced applied mathematical disciplines such as the numerical solution of eigenvalue problems.

Over the last years, spectral perturbation theory remained an important area of research, as it led to foundational results in modern high-dimensional statistics and machine learning. In this talk, we discuss the role of spectral perturbation in the age of "big data". We introduce some perturbation results for compact operators and apply them together with concentration bounds to prove statistical consistency of typical techniques in machine learning.

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