



Einladung zur öffentlichen Defensio von

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Thema der Dissertation:

**Stability Analysis for infinite-dimensional Phase
Retrieval Problems**

Abstract:

Phase retrieval originally refers to the problem of reconstructing a signal from the modulus of its Fourier transform. More generally, phase retrieval is concerned with reconstruction from phaseless linear measurements. Such problems can be found in a wide range of applications including X-ray crystallography, audio and astronomy.

In this talk we discuss the problem of recovering a function from its Gabor spectrogram with the main focus lying on stability analysis of the reconstruction process. Phase retrieval problems in infinite dimensions behave inherently unstable. Instabilities of a specific type – the “multi-component” type – are well-known. Our results reveal a surprising connection between phase retrieval, isoperimetric problems and spectral clustering. We show that the stability of the reconstruction task can be controlled in terms of the reciprocal of the Cheeger constant, a concept which quantifies the disconnectedness of the observed measurements, and thus, that there is no source of instability other than the trivial “multi-component” type for the specific phase retrieval problem under consideration.

Prüfungssenat:

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