



**UNIVERSITÄT
BIELEFELD**



Faculty of Physics



Faculty of Mathematics



THE UNIVERSITY OF
MELBOURNE

Seminar

Bielefeld - Melbourne Random Matrices

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From the JUE to the Hermitian Jacobi process: finite and infinite sizes

The Jacobi Unitary Ensemble (JUE) is a unitarily-invariant matrix model which admits various relevant applications. One way to describe its joint law is by taking the radial part of the compression by two orthogonal projections of a Haar-distributed unitary matrix. This realization has proved useful in understanding the JUE in statistical applications. To extend these results to the dynamical setting, the hermitian Jacobi process was introduced by replacing the Haar unitary matrix with a unitary Brownian motion. Despite the explicit knowledge of joint law of its eigenvalues, determining its large-size limit (in the sense of $*$ -distribution) is notoriously difficult compared to the JUE ensemble. In this talk, we will explore the spectral dynamics of the hermitian Jacobi process in both finite and infinite dimensional settings. We will discuss different approaches for computing its moments and determining the spectral distribution of its large-size limit. Additionally, we will investigate dynamical analogues for some results of the JUE and their applications to quantum information theory.

**Wednesday, 10 May 2023,
0900 hrs CET**

Zoom Conference call— Please contact Lucas Hackl
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