



**UNIVERSITÄT  
BIELEFELD**

Fakultät für Physik

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# **Determinants with Circular Root- and Jump-type Singularities**

Determinants with circular root- and jump-type singularities are of interest in the study of the eigenvalue moduli of random normal matrices.

So far determinants with circular root-type singularities have been unexplored. In the first part of this talk, I will show that such singular determinants have a novel type of asymptotic behavior described in terms of the so-called associated Hermite polynomials.

In the second part, I will focus on determinants with pure jump-type singularities, in the regime where they approach a hard edge. Such determinants give information about the disk counting statistics of coulomb gases near a hard edge and have been unexplored up to now. I will show that the counting statistics in the hard edge regime is considerably wilder than in all previously studied regimes.

The first part of the talk is joint work with S.-S. Byun, and the second part is work in progress with Y. Ameur, J. Cronvall and J. Lenells.

**Wednesday**

**06 July 2022**

**via Zoom**

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