



**UNIVERSITÄT  
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Faculty of Physics



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THE UNIVERSITY OF  
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# Seminar

Bielefeld - Melbourne Random Matrices

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### Edge behavior of two-dimensional Coulomb gases at a hard wall

We will consider a two-dimensional gas with repulsive Coulomb interactions under an external field. More precisely, we will focus on a Coulomb gas system which is determinantal and subject to a volume constraint. In the presence of a hard-wall constraint to change the equilibrium, the density of the equilibrium measure acquires a singular component at the hard wall.

In this talk, I will discuss the local statistics of Coulomb gases near the hard wall. As the number of particles tends to infinity, the Coulomb gas system properly rescaled at the hard wall converges to a determinantal point process with a kernel expressed as a Laplace-type integral, and this kernel appears in the context of truncated unitary matrices in the regime of weak non-unitarity. I will also explain an approach to universality of the kernel based on a rescaled version of Ward's equation .

**Wednesday, 10 February 2021, 0900 hrs CET**

Zoom Konferenzschaltung— Please contact Thorsten Neuschel  
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