



**UNIVERSITÄT  
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Faculty of Physics



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# Seminar

Bielefeld - Melbourne Random Matrices

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## The Wasserstein distance to the Circular Law

In this talk we investigate the Wasserstein distance between the empirical spectral distribution of non-Hermitian random matrices and the Circular Law. For general entry distributions, I present a nearly optimal rate of convergence in 1-Wasserstein distance of order  $n^{-1/2+\epsilon}$  and show that the optimal rate  $n^{-1/2}$  is attained by Ginibre matrices. This reveals that the expected transport cost of complex eigenvalues to the uniform measure on the unit disk decays faster compared to that of i.i.d. points, which is known to include a logarithmic factor. We shall also discuss the results from a point of view of random geometry, which will be accompanied by illustrative simulations.

**Wednesday, 19 January 2022, 0900 hrs CET**

Zoom Conference Call— Please contact Gernot Akemann  
(akemann@physik.uni-bielefeld.de) for details regarding access