

# AG Zufallsmatrizen Seminar

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## On statistics of bi-orthogonal eigenvectors in real and complex Ginibre ensembles: combining partial Schur decomposition with supersymmetry

I will present a method of studying the joint probability density (JPD) of an eigenvalue and the associated 'non-orthogonality overlap factor' (also known as the condition number) of the left and right eigenvectors for non-selfadjoint Gaussian random matrices.

First I derive the exact finite-N expression in the case of real eigenvalues and the associated non-orthogonality factors in the real Ginibre ensemble, and then analyse its 'bulk' and 'edge' scaling limits. The ensuing distributions are maximally heavy-tailed, so that all integer moments beyond normalization are divergent.

Then I present results for a complex eigenvalue and the associated non-orthogonality factor in the complex Ginibre ensemble complementing recent studies by P. Bourgade & G. Dubach.

The presentation will be mainly based on the paper arXiv: 1710.04699 and a joint work with Jacek Grela and Eugene Strahov arXiv: 1711.07061.

**Wednesday, 18.04.2018, 16:00 Uhr**  
**V3-201**