Non-hermitian orthogonality in random tiling problems

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Time: Wednesday 24.07., 10:30 - 11:00, Room HS 3

Abstract: I will discuss how polynomials with a non-hermitian orthogonality on a contour in the complex plane arise in certain random tiling problems. In the case of periodic weightings the setup generalizes to matrix valued orthogonality.

In work with Maurice Duits (KTH Stockholm) the Riemann-Hilbert problem for matrix valued orthogonal polynomials was used to obtain asymptotics for domino tilings of the two-periodic Aztec diamond. This model is remarkable since it gives rise to a gas phase, in addition to the more common solid and liquid phases.

[1] M. Duits and A. B. J. Kuijlaars. The two periodic Aztec diamond and matrix valued orthogonal polynomials. *Preprint arXiv:1712.05636, to appear in J. Eur. Math. Soc.*