

The eigenvalues of I.I.D. matrices are hyperuniform

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We consider the point process of the eigenvalues of real or complex non-Hermitian matrices X with independent, identically distributed entries. In this talk, I will present a recent result obtained in a joint work with L. Erdos and G. Cipolloni [1], which establishes that this point process is hyperuniform: the variance of the number of eigenvalues in a subdomain of the spectrum is much smaller than the volume of this subdomain. Our main technical novelty is a very precise computation of the covariance between the resolvents of the Hermitization of $X - z_1$, $X - z_2$, for two distinct complex parameters z_1, z_2 .

References:

- [1] G. Cipolloni, L. Erdős and O. Kolupaiev, *The eigevalues of i.i.d. matrices are hyperuniform*, arXiv: 2602.17628 (2026).