

Lectures on Random Matrices (Spring 2025)

Lecture 3: Title TBD

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Contents

1 Recap	1
C Problems (due 2025-02-22)	1

Notes for the lecturer

TBD

1 Recap

We have established the semicircle law for real Wigner random matrices. If W is an $n \times n$ real symmetric matrix with independent entries X_{ij} above the main diagonal (mean zero, variance 1), and mean zero diagonal entries, then the empirical spectral distribution of W/\sqrt{n} converges to the semicircle law as $n \rightarrow \infty$:

$$\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{i=1}^n \delta_{\lambda_i/\sqrt{n}} = \mu_{sc}.$$

The convergence is weakly almost sure.

C Problems (due 2025-02-22)

References

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