

Permutations of entries and asymptotic free independence for several classes of random matrices

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The strong connection between random matrices and free independence had been known since 1980's. when it was shown (by D.-V. Voiculescu) that Gaussian random matrices with independent entries are asymptotically free. Since then, substantial literature on asymptotic freeness relations between various classes of random matrices with independent entries has been published. Recently, we gave the first example where (asymptotic) freeness appears without independence of entries. Namely, unitarily invariant random matrices are asymptotically free from their matrix transposes. The lecture will present some recent developments of this result. In particular, it will describe some classes on entry permutations that induces asymptotic freeness for Gaussian, Wishart and Ginibre random matrices.

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