Strong convergence of tensor products of independent G.U.E. matrices

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Abstract

Given tuples of properly normalized independent $N \times N$ G.U.E. matrices $(X_N^{(1)}, \ldots, X_N^{(r_1)})$ and $(Y_N^{(1)}, \ldots, Y_N^{(r_2)})$, we proved that the tuple $(X_N^{(1)} \otimes I_N, \ldots, X_N^{(r_1)} \otimes I_N, I_N \otimes Y_N^{(1)}, \ldots, I_N \otimes Y_N^{(r_2)})$ of $N^2 \times N^2$ random matrices converges strongly as N tends to infinity. We will present the key steps and ideas of the proof. Note that it was shown by B. Hayes that this result implies that the Peterson-Thom conjecture is true.

This is a joint work with Serban Belinschi.

https://arxiv.org/abs/2205.07695v1.