

Probabilistic Operator Algebra Seminar

Organizer: Dan Virgil Voiculescu

Monday, 9:00–10:30 am, to attend via Zoom email David Jekel (djekel@uottawa.ca) remot

Oct 12 **Octavio Arizmendi**, CIMAT Guanajato

Freeness for the G -circulant Decomposition of the Partial Transpose of Random matrices

We study the asymptotic distribution of the Partial Transpose of Random Unitarily Invariant Random Matrix Ensembles from a new perspective. We introduce a left G -circulant decomposition for matrices indexed by an arbitrary finite group G , extending the diagonal decomposition associated with cyclic groups. We show that, when $A \in M_{|G|}(\mathcal{A})$ is free from $M_{|G|}(\mathbb{C})$, the components arising from the left G -circulant decomposition of A^t form a free family with the components associated with inverse pairs forming R -diagonal pairs. We also describe the distributions of these components in terms of the distribution of A . Our results recover the cyclic case and show that different group structures of the same order may lead to different free decompositions of the same matrix. This is joint work with Julian Zazuela-Obeso.