

Probabilistic Operator Algebra Seminar

Organizer: Dan-Virgil Voiculescu

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Title: *Monotonicity of entropy for random matrices.*

In a celebrated result of Artstein-Ball-Barthe-Naour, it has been shown that the classical entropy is monotone along the central limit theorem offering a beautiful conceptual thermodynamical explanation of the central limit theorem. An analogous result has been derived in the context of free probability using Voiculescu's free entropy. We revisit this result using an estimate of the maximal correlation of free random variables then explore the concept of entropy monotonicity in the context of random matrix theory. We shed the light on an intriguing phenomenon suggesting that the logarithmic energy of a random matrix is monotone in terms of the matrix dimension. We will show this for some classical random matrix models and present several open questions. This is based on joint work with Djalil Chafai and Benjamin Dadoun.