

Probabilistic Operator Algebra seminar

Organizer: Dan-Virgil Voiculescu

Monday, 9:00–10:30 am, to attend via Zoom. email David Jekel (daj@math.ku.dk) remote

Jun 15 **Thomas Buc–d’Alche**, IRMA, University of Strasbourg
Properties of tensorial free cumulants

I will discuss the generalization of free probability theory to the tensor setting. In a joint work with Luca Lionni (arXiv:2605.01887) we extend the approaches of Nechita and Park, and of Collins, Gurau, and Lionni, to give formulae for higher order free cumulants of product of mixed and pure tensors. I will discuss different notions of unitary invariance and their consequences on the definition of tensorial free cumulants. These tensorial free cumulants satisfy product relations reminiscent of those verified in the random matrix case. I will discuss a particular example of interest: Gaussian tensors with random covariances.