

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

Sep 14 **Tim Austin**, University of Warwick

Entropy and large deviations for random unitary representations

This talk will be an introduction to "almost periodic entropy". This quantity is defined for positive definite functions on a countable group, or more generally for positive functionals on a separable C^* -algebra. It is an analog of Lewis Bowen's "sofic entropy" from ergodic theory. This analogy extends to many of its properties but some important differences also emerge. I will not assume any prior knowledge about sofic entropy. After setting up the basic definition, I will focus on the special case of finitely generated free groups, about which the most is known. For free groups, results include a large deviations principle in a fairly strong topology for uniformly random representations. This, in turn, offers a new proof of the Collins-Male theorem on strong convergence of independent tuples of random unitary matrices, and a large deviations principle for operator norms to accompany that theorem.