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

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May 4 **Magdalena Musat and Mikael Rordam**, University of Copenhagen

Tensor products of convex compact sets and entanglement in C-algebras*

The Namioka-Phelps tensor product of two convex compact sets associates two new compact convex sets: the minimal and the maximal tensor product where the former is contained in the latter. They show that the two tensor products agree if one of the two convex compact sets is a Choquet simplex. It remains an open problem, known as Barker's conjecture, if the converse also holds. Barker's conjecture was recently verified by Aubrun-Lami-Palazuelos-Plavala in the finite dimensional case (and was verified by Namioka and Phelps when one of the two convex compact sets is the square). We show that Barker's conjecture holds when the compact convex sets are state spaces of C*-algebras, and we describe the two Namioka-Phelps tensor products. The minimal tensor product is precisely the set of entangled states in the (minimal) tensor product of the C*-algebras, and one can describe the maximal tensor product in terms of positive maps. We identify the trace space of the tensor product of C*-algebras as the Namioka-Phelps tensor product of the trace spaces and use this to say when the trace simplex of a tensor product of C*-algebras is the Poulsen simplex.