

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

Aug 31 **Therese Basa Landry**, UCSB

Compact quantum metric spaces from free probability

We initiate the study of quantum metric space structures for operator algebras arising from free probability, namely q -Gaussians and free Gibbs laws. Length functions on groups have been well-studied as a means of producing spectral triples which give rise to compact quantum metric spaces. For our first main result, we define compact quantum metric spaces for q -Gaussians using length-like functions by the same method as developed by Ozawa and Rieffel for spectral triples coming from length functions and applied by others to hyperbolic groups, quantum groups of rapid decay, free products, and free graph algebras. Motivated by free transport results for free Gibbs laws, we describe a universal way of defining Lip-norms in terms of a generating set, which behaves well under changes of coordinates. As our construction can be applied to any given self-adjoint tuple $(x_1, \dots, x_d)$ generating a unital C^* -algebra A , our methods may be of wider interest for constructing quantum metric spaces. This is joint work with David Jekel.