

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 21 **Paola Zurlo**, Universita degli Studi Aldo Moro, Bari, Italy
Fermionic optimal transport

We consider optimal transport between quantum dynamical systems on Z_2 - graded von Neumann algebras. In the usual, non-graded setting, Wasserstein distances between quantum systems can be defined in terms of transport plans on tensor products involving the commutant of one of the algebras. We briefly recall this construction and describe its extension to the graded setting, where the usual commutant and tensor product are replaced by the twisted commutant and the Fermi tensor product. The main point of the construction is a correspondence between fermionic and usual transport plans. More precisely, using cyclic representations associated with transport plans and the Klein isomorphisms induced by the gradings, we establish a one-to-one correspondence between fermionic transport plans and graded transport plans in the usual tensor product. This correspondence allows the Wasserstein distances in the fermionic setting to be related to the corresponding distances in the non-graded setting, and in particular yields their metric properties.