

Probabilistic Operator Algebra Seminar

Organizer: Dan Virgil Voiculescu

Monday, 9:00–10:30 am, to attend via Zoom email David Jekel (djekel@uottawa.ca) remot

Sep 28 **Martin Peev**, University of Oxford

Free Bakry-Emery Calculus

We prove a free probabilistic Bakry-Emery criterion for the Poincare Inequality and Logarithmic Sobolev Inequality. Our approach relies on a noncommutative extension of the Carre du Champ operator and its iteration to the setting of Free Probability. I will show how one can formulate a positive curvature condition in terms of direct formulae involving the potential of a Gibbs state. I will then present how one can employ these abstract curvature conditions to prove a (non-universal) free Poincare Inequality and a Logarithmic Sobolev Inequality in this setting. I will particularly stress where classical methods have to be adapted in order to accommodate the tensorial nature of the free derivative. This talk is based on joint work with Ajay Chandra and Masha Gordina.