

Probabilistic Operator Algebra Seminar

Organizer: Dan-Virgil Voiculescu

November 30 **Ping Zhong**, University of Wyoming

Title: *Superconvergence to freely infinitely divisible distributions and regularity of densities in free probability*

It is known that the normalized average of an i.i.d. sequence of free random variables with finite variance converge to the semicircle law not only in distribution, but also on the level of densities. This superconvergence phenomenon, observed first by Bercovici and Voiculescu, was subsequently extended to arbitrary limit laws for free additive convolution. We show that the same phenomenon occurs for the multiplicative versions of free convolution on the positive line and on the unit circle. We also show that the density of the free (additive and multiplicative) convolution with arbitrary freely infinitely divisible distributions vanishes at most as a cubic root near the edges of its support. Joint work with H. Bercovici and JC Wang.