Probabilistic Operator Algebra Seminar

Organizer: Dan-Virgil Voiculescu

October 16   **Zhiyuan Yang**, Texas A&M

Title: *A conjugate system for twisted Araki-Woods algebras of finite dimensional spaces*

T-twisted Araki-Woods von Neumann algebras were recently introduced by Ricardo Correa da Silva and Gandalf Lechner who generalized the Yang-Baxter deformed Gaussian von Neumann algebras of Marek Bozejko and Roland Speicher to the nontracial cases. When the twist operator T is compatible with the modular operator, da Silva and Lechner showed that the vacuum vector is separating if and only if T is Yang-Baxter and crossing symmetric. Under this separating assumption, we provide a concrete formula for a conjugate system of twisted Araki-Woods algebras when the underlying Hilbert space is finite dimensional and $\|T\| < 1$. This generalizes the corresponding formula for q-Gaussians by A. Miyagawa and R. Speicher and for q-Araki-Woods by M. Kumar, A. Skalski and M. Wasilewski. By applying the abstract results on nontracial conjugate system and free monotone transport by Brent Nelson, we also show that those twisted Araki-Woods algebras are factors and that for small T they are isomorphic to the free Araki-Woods algebras.