

# Probabilistic Operator Algebra Seminar

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Title: *Selfless  $C^*$ -algebras*

Blackadar introduced the property of strict comparison of positive elements by traces as a means to extend to  $C^*$ -algebras the comparison theory of projections in a factor. While not all simple  $C^*$ -algebras have this property, a distinct dichotomy exists between those that do and those that don't. Beyond the simple nuclear class, little is known about the prevalence of the strict comparison property among "naturally occurring" examples of simple  $C^*$ -algebras. Notably, the reduced group  $C^*$ -algebra of the free group with infinitely many generators has Blackadar's strict comparison property. The proof exploits the presence of copies of the  $C^*$ -algebra in its ultrapower in free position relative to the diagonal copy. We call a  $C^*$ -algebra endowed with a faithful trace "selfless" when free copies of itself can be found in its ultrapower precisely in this fashion. We propose to investigate selfless  $C^*$ -algebras, hinting at their potential as close analogs of  $II_1$  factors in the  $C^*$ -algebraic setting