

Probabilistic Operator Algebra Seminar

Organizer: Dan-Virgil Voiculescu

November 21 **Michael Magee**, Durham University

Title: *Strongly convergent unitary representations of limit groups.*

We prove that all finitely generated fully residually free groups (limit groups) have a sequence of finite dimensional unitary representations that 'strongly converge' to the regular representation of the group. The corresponding strong convergence statement for finitely generated free groups was proved by Haagerup and Thorbjornsen in 2005. In fact we take the unitary representations to arise from representations of the group by permutation matrices, as was proved for free groups by Bordenave and Collins in 2019. This class of limit groups that we study contains the fundamental groups of closed connected orientable surfaces of genus at least 2 (and also 'most' non-orientable surface groups). I'll focus on these examples in my talk. This is joint work with Lars Louder. Based on <https://arxiv.org/abs/2210.08953>.