

Probabilistic Operator Algebra Seminar

Organizer: Dan Virgil Voiculescu

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

Sep 21 **Dimitri Shlyakhtenko**, UCLA

On the II_1 factors of Fuchsian Groups

We show that von Neumann algebras of fundamental groups of closed orientable surfaces of genus $g \geq 2$ are free group factors on $2g - 1$ generators. The key technical ingredient involves a proof that the element $w = ABA^{-1}B^{-1}$ of the free group $F_2 = \langle A, B \rangle$ is freely complemented in the group factor: $L(F_2) = W^*(w) * W^*(v)$ for some Haar unitary $v \in L(F_2)$ that is freely independent from w . Combined with previous results, we conclude that for an arbitrary finitely generated torsion-free non-elementary discrete subgroup $\Gamma \subset PSL_2(R)$, $L(\Gamma)$ is a free group factor settling a conjecture of de la Harpe and Voiculescu. This result was obtained using OpenAI's ChatGPT Pro 6.0