Leonidas Alaoglu Memorial Lecture

April 29th, 2025
Linde Hall 310 @ 4:30pm

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Finite quotients of 3-manifold groups

It is well-known that for any finite group G, there exists a closed 3-manifold M with G as a quotient of the fundamental group of M. However, we can ask more detailed questions about the possible finite quotients of 3-manifold groups, e.g. for G and H_1,...,H_n finite groups, does there exist a 3-manifold group with G as a quotient but no H_i as a quotient? We answer all such questions. To prove non-existence, we prove new parity properties of the fundamental groups of 3-manifolds. To prove existence of 3-manifolds with certain finite quotients but not others, we use a probabilistic method, by first proving a formula for the distribution of the fundamental group of a random 3-manifold, in the sense of Dunfield-Thurston. This is joint work with Will Sawin.

Parking: Parking is available in Lot 3 (underground parking #126 on campus map) on California Blvd. between Wilson and Arden (near the tennis courts). Scan the QR code for a map with directions for getting to Linde Hall.

Questions? Please email mathinfo@caltech.edu or call 626-395-4335