

## TOPOLOGY SEMINAR

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### The virtual Haken conjecture

Tuesday, April 10th

pre-talk 2:30pm–3:30pm on background and details,  
seminar 4:00pm–5:00pm, both in 383-N

*Abstract:* We prove that cubulated hyperbolic groups are virtually special. Work of Haglund and Wise on special cube complexes implies that they are therefore linear groups, and quasi-convex subgroups are separable. A consequence is that closed hyperbolic 3-manifolds have finite-sheeted Haken covers, which resolves the virtual Haken question of Waldhausen and Thurston’s virtual fibering question. The results depend on a recent result of Wise, the malnormal special quotient theorem; the cubulation of closed hyperbolic 3-manifolds by Bergeron–Wise using the existence of nearly geodesic surfaces by Kahn–Markovic; and a generalization of previous work with Groves and Manning to the case of torsion (which is joint with Groves and Manning).