Bertrand's postulate and subgroup growth.

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007 Kemeny Hall, 4:00 pm
(Tea 3:30 pm 300 Kemeny Hall)

Abstract

In this talk I will discuss a pair of generalizations of Bertrand's postulate on gaps between successive primes to finitely generated linear groups. These results on gaps have direct connections to subgroup growth and the finiteness of L^1–norms of certain functions on profinite groups with respect to the Haar probability measure. I will explain these connections in the case of the integers, where the main tools employed are the Chinese Remainder Theorem, the Ratio Test for infinite series, and some elementary probability theory. I will also prove one of the generalizations of Bertrand's postulate for the group $\mathrm{SL}(n, \mathbf{Z})$ that requires only basic knowledge from finite fields, L'Hopital's rule, and Bertrand's postulate for primes.

This talk should be accessible to undergraduates.