

1059-20-119

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77004. *Number theory on groups.*

This talk will bring ideas from number theory, e.g., the Prime Number Theorem, Bertrand's Postulate, and Cebotarëv's Density Theorem, to study properties of infinite groups. In particular, we will introduce the notion of quantifying the extent to which a finitely generated group is residually finite. This asymptotic study connects word and subgroup growth via a function called the normal divisibility function that measures the size of the smallest finite quotient that a fixed group element maps to nontrivially. In this talk we will investigate such behavior for examples that include free groups and $SL(n, \mathcal{O}_K)$, where K is a number field. Along the way, we will answer a question of Oleg Bogopolski from the Kourovka notebook, concerning finite index subgroups of the free group. This talk uses ideas and methods from combinatorial group theory, number theory, the theory of profinite groups, and topology. Part of this talk covers joint work with B. McReynolds. (Received February 21, 2010)