Title
Growth in Groups via Linear Algebra

Abstract
Finite groups are often studied using basic combinatorics and number theory, as in a first course in Abstract Algebra. For infinite groups, however, many of these techniques are unavailable. Since so many infinite groups play an important role in geometry and topology, different methods need to be developed for their study.

In this talk, I will introduce the growth of a group, which is perhaps the most basic notion of *size* when the group is infinite. As we shall see, for certain classes of groups, growth can be studied using properties of directed graphs and basic linear algebra. This talk will be accessible to anyone who has taken a course in linear algebra.