Math 595. Asymptotic invariants of groups
Section AIG, CRN 64840
Tue, Thur , 9:30- 10:50 am

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Course description

Every finitely generated group can be considered as a metric space with the "word metric". Asymptotic group theory studies properties of that space which are true at arbitrary large scales. We are going to study several functions associated with every finitely generated (finitely presented) group. These functions quantify important asymptotic properties of groups. These are:

- The growth function (we will study the Milnor-Wolf theorem about the growth of nilpotent groups and Gromov's theorem about groups of polynomial growth, Grigorchuk's theorem about groups of intermediate growth),
- The Dehn function (we will talk about types of Dehn functions, a characterization of hyperbolic groups, connection with algorithmic problems),
- The distortion functions of subgroups,
- The divergence function and Morse elements,
- The dimension growth functions.

We shall also talk about connections between local properties of asymptotic cones and asymptotic properties of groups.