

Abstract

Oberwolfach Workshop:

Geometric Structures in Group Theory

Dates:

25 June - 1 July 2017 (Code: 1726)

Organizers:

Martin Bridson, Oxford
Linus Kramer, Münster
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Geometric group theory emerged from ideas connecting large-scale geometry, low-dimensional topology and algebra and gained power from a period of developing its own internal structures that in time were turned outwards to solve the problems that motivated its basic definitions. It has now reached a state of maturity and is having striking applications to other topics, including low-dimensional topology and the theory of profinite groups. In low-dimensional topology, the study of cube complexes and the groups that act on them was a major factor in the solution of Thurston's last open questions on 3-manifolds, and the geometric group theory of buildings has enabled major progress in the study of finiteness properties of discrete arithmetic groups and related profinite groups.

This workshop on geometric group theory will be roughly divided into four main themes, with a very strong interplay among them, namely: recent developments in group cohomology, generalizations of Gromov hyperbolicity and non-positive curvature, connections with finite and profinite topics in group theory, and the study of certain classes of singular metric spaces. More precisely, here are the main topics that will be discussed:

- Relative versions of hyperbolicity and small cancellation
- Various aspects of homological group theory
- Geometries associated to $\text{Out}(F_n)$ and mapping class groups
- Profinite aspects of group actions and totally disconnected groups
- Non-classical rigidity phenomena
- Special (cube) complexes in connection with low-dimensional topology and geometry