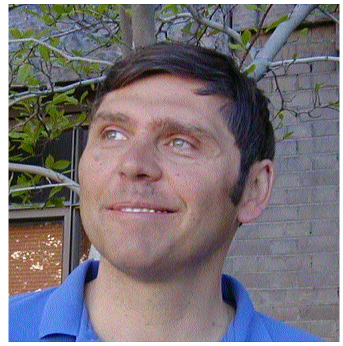
Mladen Bestvina



Professor 1985
B. S. 1982, University of Zagreb
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Activities and Awards

Alfred P. Sloan Fellowship 1988-9
Presidential Young Investigator 1988-91

Mathematical Interests

I work in the area of geometric group theory. The aim of the theory is to understand the algebraic structure of groups that arise in topology and geometry by studying spaces on which these groups act. Some of my favorite groups are mapping class groups of compact surfaces, lattices in semi-simple Lie groups, and Out(F_n). Several of my papers generalize to Out(F_n) theorems known classically for the first two examples (the Tits' Alternative, duality properties).

The techniques sometimes involve the construction of a new space on which the group under investigation acts, and sometimes they involve discovering new geometric properties of known spaces. Some of my papers deal with the construction and analysis of groups acting on trees—this is perhaps a model case that includes many interesting situations that arise in geometry/topology, and yet is rich enough so that we can say interesting things about the groups in question. Aside from topology and algebra, this work sometimes involves a study of dynamical properties of group actions, e.g., on limit sets or spaces at infinity.

Another theme in the subject is that many interesting groups act isometrically on spaces of negative, or at least nonpositive curvature. When this is not the case, one tries to come as close to this ideal situation as possible. A lot of motivation comes from 3-dimensional topology and Thurston's work that shows that many 3-manifolds can be decomposed into geometric pieces. Analogously, one tries to decompose groups into pieces that can be studied via their actions on, we hope, hyperbolic spaces.

Geometric group theory is a relatively young area, full of interesting questions and theorems yet to be discovered. As an exercise, to get in the spirit of the subject, prove the following: Any finite group of rigid motions of the plane (or of R^n) fixes a point.

Selected Publications

1. M. Bestvina and M. Handel, Train-tracks for surface homeomorphisms, *Topology* **34** (1995) 109--140.

2. Mladen Bestvina and Mark Feighn, Stable actions of groups on real trees, *Invent. Math.* **121** (1995) 287--321.

3. Mladen Bestvina and Mark Feighn, and Michael Handel. The Tits alternative for Out(F_n). I. Dynamics of exponentially-growing automorphisms. *Ann. of Math.* (2), **151** (2000) 517--623.

4. Mladen Bestvina and Noel Brady, Morse theory and finiteness properties of groups, *Invent. Math.* **129** (1997) 445--470.

5. Mladen Bestvina, Non-positively curved aspects of Artin groups of finite type, *Geom. Topol.* **3** (1999) 269--302 (electronic).

6. Mladen Bestvina and Mark Feighn, The topology at infinity of, out (F_n), *Invent. Math.*, **140** (2000) 651--692.