

Homogeneous dynamics and its applications

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In homogeneous dynamics one studies actions of a group H on a space X on which there is a transitive action of a group G containing H . Many interesting spaces arise this way (e.g. spheres, tori, moduli spaces of lattices etc.). In many instances, dynamical insights for such actions lead to interesting applications, most notably in number theory. In my research and in the research projects I give to my students we investigate both sides: On the dynamical side, we try to come up with and give answers to interesting natural dynamical questions and on the application side, we try to find new interesting links and manifestations of dynamical phenomena in various branches of mathematics. This interaction is often a two-way street. New dynamical results give rise to new applications and applications motivate new dynamical questions.