Homogeneous dynamic, hyperbolic geometry and cone conjecture

Abstract:

Hyperbolic manifold is a Riemannian manifold of constant negative curvature and finite volume. Let $S$ be a set of geodesic hypersurfaces in a hyperbolic manifold of dimension $\geq 2$. Using Ratner theory, we prove that either $S$ is dense, or it is finite. This is used to study the Kahler cone of a holomorphically symplectic manifold. It turns out that the shape of the Kahler cone is encoded in the geometry of a certain polyhedron in a hyperbolic manifold. I will explain how this correspondence works, and how it is used to obtain the cone conjecture of Kawamata and Morrison. This is a joint work with Ekaterina Amerik.