

Geometry, Groups and Dynamics/GEAR Seminar
(held at the Illinois hub of GEAR)

Tuesday, September 16, 2014, 1:00 pm, 243 Altgeld Hall

Bill Goldman (University of Maryland)

Three-dimensional affine crystals

Abstract: Crystallographers in the 19th century developed the notion of a crystallographic group to express the geometric symmetries of crystals. The classical theorems of Bieberbach gives a qualitative classification of crystallographic groups in terms of finite groups of integer matrices. In modern terms, this led to to the classification of discrete groups of isometries of Euclidean space, or, equivalently, Riemannian manifolds of zero curvature. The more general theory in affine geometry is much richer and more interesting. In this talk I will describe the recent classification in dimension three, and the intricate relationships to hyperbolic non-Euclidean geometry as well as the geometry of special relativity.

[Video](#)