1098-22-3 **Nimish A. Shah*** (shah@math.osu.edu), The Ohio State University, 100 Math Tower, 231 West 18th Ave., Columbus, OH 43210-1174. *Homogeneous dynamics and its interactions with number theory.*

Several questions about Diophantine approximation or counting of integral or rational points associated to geometric objects involve two types of groups of symmetries - an infinite discrete group Γ associated to the arithmetic quantities, and a continuous group H associated to the geometric side. These groups may arise as subgroups of a Lie group $G = \mathrm{SL}(n, \mathbf{R})$. The study of dynamical properties of the left action of H on G/Γ, namely *homogeneous dynamics*, provides deep insights into the original number theoretic problem.

Margulis' resolution of Oppenheim conjecture in the late eighties attracted great attention to the power of this method. Ratner's theorems on algebraic rigidity of unipotent dynamics in the early nineties, and the work of Lindenstrauss on rigidity properties of the diagonal group actions in the last decade have lead to tremendous growth of techniques and scope of applications of this field.

In this talk we will explore some examples of important number theoretic questions answered via homogeneous dynamics. We will then describe more recent developments on this theme. (Received January 29, 2014)