SPEAKER: Hee Oh (Brown)

TITLE: Manin's conjecture on rational points and Adelic periods

ABSTRACT: Understanding the rational points of a variety is a fundamental subject in arithmetic geometry. For Fano varieties, Manin formulated a conjecture around 1987 on the asymptotic number of rational points of bounded height. By studying the rigid properties of flows on homogeneous spaces of adelic groups, we can approach this conjecture at least for homogeneous varieties.

I will state a general equidistribution theorem on semisimple adelic periods, and explain several theorems on rational points, including some new cases of Manin's conjecture, as applications. This talk is based on a joint work with Alex Gorodnik.

Title for the RTG seminar: Counting integral points and flows on homogeneous spaces

Abstract: How does one obtain the asymptotic formula for the number of $X \in SL_n(Z) : X^t = -X, ||X|| < T$ as $T \to \infty$? I will explain one approach using unipotent flows on $SL_n(\mathbb{Z})\backslash SL_n(\mathbb{R})$. Understanding this approach is the basic ingredient in the approach to Manin's conjecture to be discussed in my number theory talk, where I will simply replace the integers $\mathbb{Z}$ by the rationals $\mathbb{Q}$, the Euclidean norm of X by a height of a rational point, and finally $SL_n(\mathbb{Z})\backslash SL_n(\mathbb{R})$ by $SL_n(\mathbb{Q})\backslash SL_n(\text{Adele}(\mathbb{Q}))$.