Speaker: Emmanuel Breuillard

Title: A subspace theorem for manifolds

Abstract: In the late 90's Kleinbock and Margulis solved a long-standing conjecture due to Sprindzuk regarding diophantine approximation on submanifolds of $\mathbb{R}^n$. Their method used homogeneous dynamics via the so-called non-divergence estimates for unipotent flows on the space of lattices. This new point of view has revolutionized metric diophantine approximation. In this talk I will discuss how these ideas can be used to revisit the celebrated Subspace Theorem of W. Schimidt, which deals diophantine approximation for linear forms with algebraic coefficients and is a far-reaching generalization of Roth's theorem. Combined with a certain understanding of the geometry at the heart of Schmidt's Subspace Theorem, in particular the notion of Harder-Narasimhan filtration and related ideas borrowed from Geometric Invariant Theory, the Kleinbock-Margulis method leads to a metric version of the Subspace Theorem, where the linear forms are allowed to depend on a parameter. This result encompasses much previous work about diophantine exponents of submanifolds. If time permits I will also discuss consequences for diophantine approximation on Lie groups. Joint work with Nicolas de Saxcé (Paris 13).