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Anatole Katok* (katok_a@math.psu.edu), Department of Mathematics, Pennsylvania State University, University Park, PA 16802. *Actions of higher rank abelian groups: from measure rigidity to arithmeticity to topology.*

We will describe a recent progress in the “non-uniform measure rigidity” program started in 2007 and pursued in collaboration with Boris Kalinin and Federico Rodriguez Hertz in various combinations. We show that for a smooth action of discrete higher rank abelian group preserving an ergodic measure assumptions of general dynamical nature including linear algebra of Lyapunov exponents and entropy imply striking rigidity properties. In particular, the action, restricted to a subgroup of finite index, is isomorphic in the sense of ergodic theory to a finite factor of action by automorphisms of a torus. Under a maximal rank assumption strong conclusions on topology of the ambient manifold are also derived. Results presented in this talk are joint with Federico Rodriguez Hertz. (Received September 22, 2011)