1147-11-81 **Andrei Rapinchuk*** (asr3x@virginia.edu), Department of Mathematics, University of Virginia, PO Box 400137, Charlottesville, VA 22904. *Eigenvalue rigidity and groups with good reduction.*

We will discuss results and conjectures related to a new form of rigidity called eigenvalue rigidity. Its idea goes back to joint work with G. Prasad on isospectral locally symmetric spaces, where we introduced the notion of weakly commensurable Zariski-dense subgroups and gave its complete analysis for arithmetic subgroups of simple algebraic groups. We also showed that two simple algebraic groups containing weakly commensurable finitely generated Zariski-dense subgroups necessarily have the same field of definition and the same type. The current effort is directed towards proving that only finitely many forms of a given type over a given base field can contain a finitely generated Zariski-dense subgroup weakly commensurable to a given one. This is true for all lattices. The general case reduces to the question about the finiteness of the number of isomorphism classes of forms having good reduction at a suitable set of discrete valuations of the base field. The latter question is related to other key finiteness questions in the emerging arithmetic theory of algebraic groups over finitely generated fields, such as the properness of the global-to-local map in Galois cohomology. I will report on recent progress in this direction made jointly with V. Chernousov and I. Rapinchuk. (Received December 02, 2018)