Topology, Algebraic Geometry, & Dynamics Seminar

Algebraic Groups with Good Reduction

Andrei Rapinchuk, University of Virginia

The techniques involving reduction are common in number theory and arithmetic geometry. In particular, elliptic curves and general abelian varieties with good reduction have been the subject of a very intensive investigation over the years. The purpose of this talk is to report on the recent work that focuses on the analysis of good reduction in the context of linear algebraic groups. More precisely, let G be a reductive algebraic group over a field K, and assume that K is equipped with a ``natural'' set V of discrete valuations. We are interested in the K-forms of G that have good reduction at all v in V. In the case K is the fraction field of a Dedekind domain, a similar question was considered by G.~Harder; the case $K = \mathbb{Q}$ and V is the set of all p-adic places was treated in detail by B.H.~Gross and B.~Conrad. I will discuss the emerging results in the higher-dimensional situation where K is the function field $k(C)$ of a smooth geometrically integral curve C over a number field k, or even an arbitrary finitely generated field. I will also indicate connections with other questions involving the genus of G (i.e., the set of isomorphism classes of K-forms of G having the same isomorphism classes of maximal tori as G), the Hasse principle, weakly commensurable Zariski-dense subgroups, etc. (Joint work with V. Chernousov and I. Rapinchuk.)

Date: Friday, September 6, 2019
Time: 1:30-2:30 pm
Place: 4106 Exploratory Hall

For special accommodations, please contact David Carchedi via email at dcarched@gmu.edu.