Meeting: 1005, Newark, Delaware, SS 9A, Special Session on Arithmetic Groups and Related Topics

1005-20-23 **Andrei S. Rapinchuk*** (asr3x@virginia.edu), Department of Mathematics, University of Virginia, Charlottesville, VA 22904. *On centrality of the congruence kernel (joint work with Gopal Prasad).*

Let G be an absolutely simple simply connected algebraic group over a global field K, S be a subset of the set V^K of valuations of K containing all archimedean valuations, and $\mathcal{O}(S)$ be the ring of S-integers in K. The congruence subgroup problem for the group of S-integral points $G_{\mathcal{O}(S)}$ boils down to computation of the *congruence kernel* $C^S(G)$ which is defined as the kernel of the natural homomorphism $\widehat{G} \to \overline{G}$, where $\widehat{G}$ and $\overline{G}$ are the completions of the group G_K with respect to the topologies generated by the systems of all subgroups of finite index in $G_{\mathcal{O}(S)}$ and all congruence subgroups corresponding to nonzero ideals $\mathfrak{a} \subset \mathcal{O}$, respectively. If $C^S(G)$ is finite then $G_{\mathcal{O}(S)}$ issaid to have the *congruence subgroup property*. It is known that the finiteness of $C^S(G)$ is (basically) equivalent to its centrality, i.e. to the fact that $C^S(G) \subset Z(\widehat{G})$. I will report on a proof of centrality of $C^S(G)$ in the case where $V^K \setminus S$ is finite (semi-local case) and describe some applications of this result to the most interesting case of finite S. (Received January 12, 2005)