

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

1005-22-24 **Alireza Salehi Golefidy***, Math. Dept., 10 Hillhouse Ave., New Haven, CT 06520. *Minimum co-volume of lattices in a classical Chevalley group over $\mathbb{F}_q((1/t))$.*

This talk is about minimum co-volume of lattices in a classical Chevalley group over a local field of positive characteristic. There are a lot of ways to show that such value exists. One way is to use a celebrated finiteness theorem of Borel and Prasad. However none of these existence theorems gives us this value. A classical result of Siegel asserts that if $G = SL_2(\mathbb{R})$ and its Haar measure μ is appropriately normalized then $\min_{\Gamma} \mu(\Gamma \backslash G) = \pi/21$, where Γ runs over all the lattices of G . The minimum is attained for a co-compact lattice. The case of $SL_2(\mathbb{C})$ is unknown yet. Lubotzky considered this problem for non-Archimedean fields. First, he considered the case of positive characteristic where he observed that for odd primes minimum occurs only for non-uniform lattices and managed to compute this value. In the second paper, Lubotzky and Weigel considered the characteristic zero case and calculated the minimum co-volume.

In my work, I studied lattices in a classical Chevalley group over a non-Archimedean local field of positive characteristic. I managed to find the minimum co-volume and characterize all the lattices of minimum co-volume. (Received January 12, 2005)