Department of Mathematics, BGU

AGNT

On *Oct ,24 2018*

At *15:10 – 16:25*

In *101-*

Zev Rosengarten (HUJI)

will talk about

Tamagawa Numbers of Linear Algebraic Groups over Function Fields

Abstract: In ,1981 Sansuc obtained a formula for Tamagawa numbers of reductive groups over number fields, modulo some then unknown results on the arithmetic of simply connected groups which have since been proven, particularly Weil's conjecture on Tamagawa numbers over number fields. One easily deduces that this same formula holds for all linear algebraic groups over number fields. Sansuc's method still works to treat reductive groups in the function field setting, thanks to the recent resolution of Weil's conjecture in the function field setting by Lurie and Gaitsgory. However, due to the imperfection of function fields, the reductive case is very far from the general one; indeed, Sansuc's formula does not hold for all linear algebraic groups over function fields. We give a modfiication of Sansuc's formula that recaptures it in the number field case and also gives a correct answer for pseudo-reductive groups over function

fields. The commutative case (which is essential even for the general pseudo-reductive case) is a corollary of a vast generalization of the Poitou-Tate nine-term exact sequence, from finite group schemes to arbitrary affine commutative group schemes of finite type. Unfortunately, there appears to be no simple formula in general for Tamagawa numbers of linear algebraic groups over function fields beyond the commutative and pseudo-reductive cases. Time permitting, we may discuss some examples of non-commutative unipotent groups over function fields whose Tamagawa numbers (and relatedly, Tate-Shafarevich sets) exhibit various types of pathological behavior.