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

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Injectivity problems in non-abelian galois cohomology of algebraic groups.

For an algebraic group G over a field F, we let $H^1(F,G)$ denote the first cohomology set $H^1(\Gamma, G(F_{sep}))$, where F_{sep} is the separable closure of F, $G(F_{sep})$ is the abstract group of F_{sep}-points and $\Gamma = Gal(F_{sep}/F)$ is the absolute Galois group of F. The pointed set $H^1(F,G)$ is functorial in both F and G. If L/F is an extension, there is a natural induced map of pointed sets $H^1(F,G) \longrightarrow H^1(L,G)$. Serre asked for what algebraic groups and field extensions L/F this induced map is injective. We give affirmative answer for the cases of all non-split projective groups of central simple algebras with involution, non-split simple groups of exceptional type G_2 and finite separable field extensions L/F of odd-degree. The work also includes in detail the case where the basefield is of characteristic 2. (Received February 04, 2005)