Title: Real elements in groups of type F_4

Abstract: Let G be a group (resp. an algebraic group defined over a field k). For the latter case, let $G(k)$ denote the group k-rational points of G. An element $g \in G$ (resp. $G(k)$) is called real (resp. k-real) if there exists $h \in G$ (resp. $G(k)$) such that $hgh^{-1} = g^{-1}$. An element $g \in G$ (resp. $G(k)$) is said to be strongly real (resp. strongly k-real) if there exists $h \in G$ (resp. $G(k)$) such that $hgh^{-1} = g^{-1}$ and $h^2 = 1$.

An exceptional algebraic group of type F_4 over a field k, is defined as the automorphism group of an Albert algebra over k. In this talk we prove that in a compact connected Lie group of type F_4, every element is strongly real. We also describe the structure of k-real elements in algebraic groups of type F_4 defined over an arbitrary field k.