

***k*-involutions of Exceptional Linear Algebraic Groups**

ABSTRACT. Symmetric spaces have been studied for their role in Lie groups and algebraic groups. They can be defined as the homogeneous spaces G/K where G is a reductive algebraic group and K maximal compact subgroup, which is also the fixed point group of an involution. Generalizations of symmetric spaces arise in many areas and are often called symmetric k -varieties. A symmetric k -variety is defined as the quotient G_k/H_k , where $H = G^\theta$ is the fixed point group of a k -involution θ of G and G_k and H_k are the k -rational points of G and H . For every isomorphy class of k -involutions we get an isomorphy class of symmetric k -varieties. These have been classified for some algebraic groups of types A , B , C , and D . We have some preliminary results for groups of type G_2 and F_4 , which should lead to a full classification for the fields $k = \mathbb{C}$, \mathbb{R} , \mathbb{Q}_p , and \mathbb{F}_p and continuing to groups of type E .