subgroup K not in the center such that G/K is a subgroup of the symmetric group on 7 elements S_7.

c. The proof of Theorem 1 is similar to [2] and will appear elsewhere.

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GRADED ALGEBRAS, ANTI-INVOLUTIONS, SIMPLE GROUPS AND SYMMETRIC SPACES

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We will outline two different generalisations of the Brauer group of a field (of characteristic $\neq 2$), and a third which combines them. By specialising to real and complex fields, we obtain algebra which describes the (classical) real Lie groups and symmetric spaces. The theory below can be generalised to arbitrary commutative rings; details will appear elsewhere.

We first recall the theory of the classical Brauer group of a field k[2]. Consider simple finite-dimensional k-algebras with centre k. Any such algebra can be written as a matrix ring $M_n(D)$, where D is a division ring with centre k. Write $M_n(D) \sim D$: this induces an equivalence relation. The class of algebras is closed under tensor product. Multiplication is compatible with the equivalence relation, hence induces a product on the set of equivalence classes. For this product, the class of k acts as unit, and taking the opposite algebra gives an inverse. We have an abelian group, $B(k)$.

We next define the graded Brauer group [3], $GB(k)$, of a field k of characteristic $\neq 2$. Here consider ($\mathbf{Z}_2$-) graded k-algebras $A = A_0 \oplus A_1$ of finite dimension, with no proper graded ideals, and such that the intersection of A_0 with the centre of A is k: we call these graded central simple algebras over k. We induce an equivalence relation by $A \sim A \otimes M_n(k)$, where $M_n(k)$ is graded by regarding it as the endomorphism ring of a graded vector space $k^n = V_0 + V_1$, for some grading

[1] To obtain an abstract simple group it suffices in most cases to take the quotient of the commutator subgroup of G by its centre: see [5].