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Computing the Fine Structure of Symmetric k -Varieties.

The representation theory of symmetric k -varieties has important applications in many areas of mathematics. Of particular interest is the fine structure of symmetric k -varieties. The fine structure can be described by three invariants. In my work I use tools from algebraic group theory and representation theory to compute and classify two of the three invariants. In the case that the Galois extension to \bar{k} is of order 2, the first of these invariants can be described by a pair of involutions, (σ, θ) , acting on the Lie algebra, which corresponds to an admissible k -involution. For each of these admissible k -involutions, the second invariant can be described by the Weyl-orbits of the k -inner elements, ε , representing pairs $(\sigma, \theta \circ \text{Int}(\varepsilon))$. (Received September 10, 2012)