1125-22-708 **Chal Benson*** (bensonf@ecu.edu), Department of Mathematics, East Carolina University, Greenville, NC 27858. *Antiholomorphic involutions and multiplicity free representations.*

Let K be a compact Lie group acting unitarily on a finite dimensional hermitian vector space V. We form the associated representation of K in the polynomial ring $\mathbb{C}[V]$ and call $K : V$ a (linear) *multiplicity free action* when this associated representation is multiplicity free. A result due to Faraut and Thomas shows that this will be the case whenever there exists an antiholomorphic involution on V preserving K-orbits. Independent results of Akhiezer and Sasaki show, conversely, that such an involution necessarily exists whenever $K : V$ is multiplicity free. The talk will survey these results and outline elementary proofs under restricted hypotheses. (Received September 09, 2016)