

1079-05-21

Benjamin J Wyser* (bwyser@math.uga.edu), Department of Mathematics, University of Georgia, Boyd Graduate Studies Research Center, Athens, GA 30602-7403.

GL(p, C) × GL(q, C)-orbits on the flag variety and Schubert structure constants for (p, q)-pairs.

Let G be a complex, reductive algebraic group, and let $\theta : G \rightarrow G$ be an involution of G . The fixed point subgroup $K = G^\theta$ is referred to as a symmetric subgroup of G . K acts on the flag variety G/B with finitely many orbits. The geometry of these orbits and their closures plays an important role in the infinite-dimensional representation theory of a certain real form of G .

One interesting example of a symmetric pair is $(G, K) = (GL(p + q, \mathbb{C}), GL(p, \mathbb{C}) \times GL(q, \mathbb{C}))$. Restricting attention to this example, I will discuss a recent result which establishes that a number of the K -orbit closures in this case coincide with certain Richardson varieties. When combined with a theorem of M. Brion on expressing the class of such an orbit closure in the basis of Schubert cycles, this observation implies a positive (indeed, multiplicity-free) rule for certain Schubert structure constants $c_{u,v}^w$ — those for which u, v form what I refer to as a “ (p, q) -pair”. (Received October 31, 2011)