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Equivariant Schubert calculus using Bott-Samelson manifolds.

In the 1950s, Raoul Bott and Hans Samelson introduced a manifold that maps to G/B in a generically one-to-one fashion, and whose cohomology ring contains an isomorphic copy of the cohomology ring of G/B. The construction of each of these manifolds, now called Bott-Samelson manifolds, depends on a choice of reduced word expression for the long word in the associated Weyl group. The original construction works equally well for equivariant cohomology, considering the left torus action on a Bott-Samelson and on G/B. The multiplicative structure of the equivariant cohomology of a Bott-Samelson manifold can be "pushed forward" to obtain formulas for the structure constants downstairs; in some cases one can derive positive formulas. I will describe several of the positive formulas obtained in Schubert calculus using these methods. Part of this work is joint with Allen Knutson. (Received September 22, 2015)