Jim Carrell: Singular Loci of Schubert and Other Varieties with a Torus Action

We will survey what is known about the singular loci of Generalized Schubert varieties and certain other varieties in an algebraic homogeneous space G/P which are invariant under a maximal torus T in G. Here G denotes a linear algebraic group over an algebraically closed field and P is any parabolic subgroup. In particular we will discuss some joint work with Jochen Kuttler motivated by the technique of using Peterson translates to study the linear span of the reduced tangent cone to a Schubert variety at a fixed point of the torus T.