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Affine (Grassmannian) Schubert Calculus: polynomial representatives and Pieri rules.

I will talk about some first steps in developing Schubert calculus on the affine Grassmannian. I will begin by describing polynomial representatives for the (co)homology Schubert classes in the affine Grassmannian, and briefly explain the connection with classical work of Kostant-Kumar and more recent work of Peterson.

Then I will give Pieri formulae for multiplying special Schubert classes in the affine Grassmannian, and conjecturally the affine flag manifold. These affine Pieri rules are established purely combinatorially.

The second part of this is joint work with Luc Lapointe, Jennifer Morse and Mark Shimozono. (Received August 08, 2006)