Meeting: 1001, Evanston, Illinois, SS 1A, Special Session on Modern Schubert Calculus

1001-14-256

Alexander Yong* (ayong@math.berkeley.edu), 970 Evans Hall, UC Berkeley, Berkeley, CA 94720-3840, and **Allen Knutson** (allenk@math.berkeley.edu), 970 Evans Hall, UC Berkeley, Berkeley, CA 94720-3840. *Gröbner geometry of Schubert and Grothendieck transition formulae.*

We geometrically interpret Alain Lascoux's transition formula for Grothendieck polynomials. For a permutation π thought of as a permutation matrix, let $\overline{X}_\pi := \overline{B_-\pi B_+} \subseteq M_{n\times n}(\mathbb{C})$ denote a **matrix Schubert variety**. We construct a flat family whose general fiber is isomorphic to $\overline{X}_\pi$ and whose special fiber is reduced and Cohen-Macaulay. The components of the limit are also matrix Schubert varieties (one of which is intersected with an "irrelevant" coordinate hyperplane). We relate this geometry to some subtraction-free formulae (both new and old) from the study of (K-theory) Schubert calculus and degeneracy loci; see Allen Knutson's talk. For example, we deduce another geometric interpretation of the classical Littlewood-Richardson rule, as counting components of a partially degenerated matrix Schubert variety. (Received August 28, 2004)