

1031-14-76

Allen Knutson* (allenk@math.ucsd.edu). *Geometric vertex decompositions of Schubert varieties.*

I'll give a new proof that Schubert varieties are normal and Cohen-Macaulay, based on a variation of the following theorem:

Let X be a reduced and irreducible projective scheme, and X' a flat degeneration of it. Assume that X' is generically reduced, and that its reduction is a union $A \cup B$ of two normal components, whose intersection $A \cap B$ is reduced and irreducible. Then X' is reduced, and X is normal. If A , B , and C are Cohen-Macaulay, then X is too.

The proof is by a double induction on the Bruhat order, and uses no cohomology-vanishing techniques (e.g. appeal to characteristic p). Rather, I'll introduce and make use of the limit “branchvariety”, a reduced replacement for the limit subscheme X' . Since the degeneration is T -equivariant, I'll also get a new proof of the Billey-Willems formula for the restrictions of equivariant Schubert classes to fixed points. (Received August 03, 2007)