

Harvard-MIT Algebraic Geometry Seminar

Branchvarieties and automatically reduced flat limits

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Any one-parameter family of subschemes of Y , defined for nonzero t , can be completed in a canonical way to provide a subscheme for $t = 0$. But the $t = 0$ fiber may be nonreduced even if the general fiber is reduced.

Alexeev and I defined a different limit, the “limit branchvariety,” which is automatically reduced and has a finite map to the limit subscheme. I’ll recall a few results about these.

If this finite map is an embedding, then it is an isomorphism; the limit scheme is in fact reduced. This gives new criteria for reducedness (or flatness, depending on your point of view). I’ll prove one such criterion, and use another to give a new proof that Schubert varieties are reduced and Cohen-Macaulay. (The original proofs used Frobenius splitting or other cohomology-vanishing arguments.)

Tuesday December 11th

4:30 p.m.

MIT (2-142)