

# Special Algebraic Geometry Seminar

## Limits of subvarieties: subschemes vs. branchvarieties

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Part of the scheme revolution in algebraic geometry was a wholehearted acceptance of nilpotents in coordinate rings, particularly for understanding limit subschemes of families of subvarieties. The associated geometry has always been rather unintuitive: for example, even the dimension of the “Hilbert scheme” of  $N$  points in 3-space is unknown for large  $N$ , because of the complicated ways the points can sit atop one another!

In this talk I’ll explain an alternative way to take limits of subvarieties, in which one keeps the “variety” and gives up the “sub”; instead of a limit subscheme, we will get a “branchvariety”, a reduced branched cover of a subvariety. There is a corresponding moduli space that replaces the Hilbert scheme, but is often much simpler. This will be illustrated with a great many examples.

This work is joint with Valery Alexeev.

Wednesday, February 15th  
M.I.T. 2-139 at Noon

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