1052-13-301 **Dustin A. Cartwright*** (dustin@math.berkeley.edu), University of California, Berkeley, Department of Mathematics, 970 Evans Hall #3840, Berkeley, CA 94720-3840, and **Bernd Sturmfels**. *The Hilbert scheme of the diagonal in a product of projective spaces.*

The diagonal in a product of projective spaces is cut out by the ideal of 2×2-minors of a matrix of unknowns. The multigraded Hilbert scheme which classifies its degenerations has a unique Borel-fixed ideal. This Hilbert scheme is generally reducible, and its main component is a compactification of $PGL(d)^n/PGL(d)$. For $n = 2$ we recover the manifold of complete collineations. For projective lines we obtain a space of trees that is irreducible but singular. All ideals in our Hilbert scheme are radical. (Received September 01, 2009)