1035-14-1498   **David Eisenbud*** (`de@msri.org`), Dept of Math, UCB, Berkeley, CA 94720, and **Roya Beheshti-Zavareh**. *The Fibers of a General Projection.*

One way in which secants appear is in the study of general projections of a variety to a hypersurface. Knowledge of the fibers of such a projection can be used to analyze X, and this is how the theory of curves and surfaces was pursued classically.

If X is a smooth projective variety of dimension n, and n is small, then the fibers are known to have length bounded by $n + 1$. However Lazarsfeld has observed that, when n is large, the lengths of the fibers will often be much bigger than $n + 1$. I will describe what's known, then explain recent work I have done with Roya Beheshti on an invariant of the fibers that is always bounded by $n + 1$ and coincides with the length in simple cases. This work also gives bounds on the dimension of the variety of k-secant lines, reproving and extending Ziv Ran's "$n + 1$-Secant Lemma". (Received September 20, 2007)