1035-14-1510 **Maria Chiara Brambilla*** (brambilla@math.unifi.it), Dipartimento di Matematica "U. Dini", Viale Morgagni 67 A, 50134 Firenze, Italy. *Secant varieties and polynomial interpolation.*

Polynomial interpolation problems in projective spaces consist in computing the dimension of linear systems of hypersurfaces of degree d in $\mathbb{P}^n$ with prescribed singularities of fixed multiplicity. Such problems have been widely studied. They are linked to Waring's problem for polynomials and to the study of higher secant varieties of projective varieties.

A fundamental result in this context is the theorem of Alexander and Hirschowitz, concerning the case in which all the singularities are double points. In my talk I will discuss some aspects of the techniques used in the proof of the theorem of Alexander and Hirschowitz, and I will give some generalizations and applications. This is joint work with Giorgio Ottaviani. (Received September 20, 2007)