

# Harvard-M.I.T. Algebraic Geometry Seminar

## CASTELNUOVO THEORY AND THE GEOMETRIC SCHOTTKY PROBLEM

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The aim of this talk is to explain how Castelnuovo theory in projective space has a precise analogue for abelian varieties. This can be quite surprisingly related in a very concrete way to the geometric Schottky problem, namely the problem of identifying Jacobians among all principally polarized abelian varieties (ppav's) via geometric conditions on the polarization. The main result is that a ppav satisfies a precise analogue of the Castelnuovo Lemma if and only if it is a Jacobian. I will explain how this is closely related to a well-known Schottky-type conjecture, namely the Trisecant Conjecture of Welters. I will also present other results and conjectures which show an extremely close parallel between geometry in projective space and Schottky-type projective geometry on abelian varieties. This is joint work with G. Pareschi.

Tuesday, December 6th, 2004

3:00 p.m.

MIT Room 4-149

<http://www-math.mit.edu/ags/>