

Jacobians and the Castelnuovo Lemma

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I will present a new characterization of Jacobians among all irreducible principally polarized abelian varieties. The result is based on the observation that the first steps of the classical Castelnuovo theory for projective spaces have a precise and natural analogue for p.p.a.v.'s. Then Jacobians are characterized as those p.p.a.v.'s satisfying a "Castelnuovo Lemma". Some conjectural developments of the parallel between projective spaces and abelian varieties will be discussed at the end of the talk. This is a joint work with Mihnea Popa (preprint math.AG/0407370).