

Harvard-M.I.T. Algebraic Geometry Seminar

CHARACTERIZING JACOBIANS VIA TRISECANTS OF THE KUMMER VARIETY

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We will discuss a proof of Welter's trisecant conjecture: an indecomposable principally polarized abelian variety X is the Jacobian of a curve if and only if there exists a trisecant of its Kummer variety $K(X)$.

This remarkable conjecture was motivated by the celebrated Gunning's theorem and by another famous conjecture: the Jacobians of curves are exactly the indecomposable principally polarized abelian varieties whose theta-functions provide explicit solutions of the so-called KP equation. The latter was proposed earlier by Novikov and was unsettled at the time of Welter's work. It was proved later by T. Shiota and until recently has remained the most effective solution of the classical Riemann-Schottky problem.

The characterization of the Jacobians proposed by the trisecant conjecture is much stronger. Its proof is based on a notion of integrable *linear equations* and new type cubic identities for the theta-functions valid for the case of Jacobians on the theta-divisor.

Tuesday, October 3rd

3:00 p.m.

MIT Room 4-153

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