

Meeting: 1003, Atlanta, Georgia, SS 32A, AMS Special Session on Arithmetic Algebraic Geometry, I

1003-11-669 **John T. Cullinan*** (cullinan@math.umass.edu), Department of Mathematics and Statistics,
Lederle Graduate Research Tower, University of Massachusetts, Amherst, MA 01003. *Some
Local-Global Properties of Torsion Points on Abelian Varieties.*

Let A be an abelian variety over a number field K and let ℓ be a prime number. If A has a K -rational ℓ -torsion point, then for almost all prime ideals \mathfrak{p} of K , A has an ℓ -torsion point mod \mathfrak{p} . Katz has shown that the converse is true if $\dim A \leq 2$, and has exhibited specific counterexamples when $\dim A \geq 3$. Using the subgroup structure of the symplectic group, we give a complete classification of those abelian threefolds which violate this local-global principle for ℓ -torsion. Some geometric examples will be provided. (Received September 27, 2004)