

ALGEBRA
SEMINAR

Bounding torsion in geometric families of abelian varieties

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Abstract: A celebrated theorem of Mazur asserts that the order of the torsion part of the group of rational points of an elliptic curve over \mathbb{Q} is absolutely bounded; it is conjectured that the same is true for abelian varieties over number fields K , though very little progress has been made in proving it. The natural geometric analog where K is replaced by the function field of a complex curve—known as the geometric torsion conjecture—is equivalent to the nonexistence of low genus curves in congruence towers of Siegel modular varieties. In joint work with J. Tsimerman, we prove the conjecture for abelian varieties with real multiplication. We'll discuss a general method for bounding the genus of curves in locally symmetric varieties using hyperbolic geometry to bound Seshadri constants and apply it to some related problems.

Tuesday, October 4, 2016, 4:00 pm
Mathematics and Science Center: W306

MATHEMATICS AND COMPUTER SCIENCE
EMORY UNIVERSITY