

COLLOQUIUM

University of Notre Dame
Department of Mathematics

Benjamin Bakker

Humboldt-Universitt zu Berlin

Will give a lecture entitled

Torsion in families of abelian varieties and hyperbolicity of moduli spaces

On

Thursday, January 21, 2016

at 4:00 PM in Room 125 Hayes-Healy Hall

Tea in Room 257 (lounge in Hurley Hall) at 3:30 p.m.

Abstract:

The group of rational points is an important but subtle invariant of an abelian variety defined over a number field. In the case of an elliptic curve defined over \mathbb{Q} , a celebrated theorem of Mazur asserts that there are only finitely many possibilities for the torsion part; the same is conjectured to be true for all abelian varieties over number fields though very little has been proven in higher dimensions. The natural geometric analog, known as the geometric torsion conjecture, asks for a bound on the torsion sections of a family of abelian varieties over a complex curve, and can be interpreted as the nonexistence of low genus curves in congruence towers of Siegel modular varieties. We will discuss a general method for bounding the genus of curves in locally symmetric varieties using hyperbolic geometry and apply it to some special cases of the torsion conjecture as well as some related problems. Along the way we will also deduce some results about the global geometry of these moduli spaces. This is joint work with J. Tsimerman.