Arithmetic & Algebraic Geometry

Ann Arbor, Michigan
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August 5-9, 2019

1 Hélène Esnault: Frobenius invariant Subloci of formal Lie groups of multiplicative type over an l-adic ring, and applications

2 Wei Ho: Hessian constructions for genus one curves

3 Daniel Krashen: Field patching, local-global principles and rationality (August 5th)

Abstract

This talk will present a brief survey of local-global principles for torsors for algebraic groups over higher dimensional arithmetic fields via field patching techniques. In particular, I'll discuss new work which makes a connection between obstructions to such local-global principles and obstructions to rationality of algebraic groups.

4 Jacob Lurie, Tamagawa Numbers in the Function Field Case

Abstract

Let G be a connected semisimple algebraic group over a global field K, and let A denote the ring of adeles of K. Tamagawa observed that the locally compact group G(A) is equipped with a canonical translation-invariant measure. A celebrated conjecture of Weil asserts that if G is simply connected, then the measure of the quotient space G(A)/G(K) is equal to 1. When K is a number field, this conjecture was proven Kottwitz (following earlier work of Langlands and Lai). In these talks, I'll discuss joint work with Dennis Gaitsgory about the function field case, exploiting ideas from algebraic topology.

4.1 August 5th

5 Davesh Maulik: Topology of Higgs moduli spaces via abelian surfaces (August 5th)

Abstract

In this talk, we study cases of the P=W conjecture for Higgs bundles on a curve, using techniques from compact hyperkahler geometry. This is joint work in progress with Mark de Cataldo and Junliang Shen.

6 Bjorn Poonen: The local-global principle for stacky curves (August 5th)

Abstract

For smooth projective curves of genus g over a number field, the local-global principle holds when g=0 and can fail for g=1, as has been known since the 1940s. Stacky curves, however, can have fractional genus. We construct stacky curves of genus 1/2 that violate the local-global principle, and show that 1/2 cannot be reduced. This is joint work with Manjul Bhargava.