

abstract

IAS/PU NUMBER THEORY

Topic:

Speaker:

Affiliation:

Date:

Time/Room:

p-adic height pairings are analogues of the real height pairings that show up for example in the Birch-Swinnerton Dyer conjectures on special values of L-functions of Abelian varieties. The p-adic pairings show up when one tries to formulate p-adic analogues of these conjectures. The work of Mazur, Stein and Tate from two years ago gives a manageable algorithm for computing this pairing on elliptic curves. The talk will present an algorithm for the computation of p-adic height pairings on hyperelliptic curves over number fields. Our work is not directly related to the work of Mazur Stein and Tate, though there are some similarities in the difficulties that occur and in the use of Kedlaya's algorithm.

I will first explain where this height pairing arise, and how it decomposes into a sum of local terms at the places of the field. The most interesting is for places above the prime p . We use a description of these local terms given by Coleman and Gross that uses the theory of Coleman integration that I will also sketch. I will also review how one computes Coleman integrals using Kedlaya's algorithm and explain some of the tricks that are used to complete the computation at these primes. Finally I will discuss the situation at other primes, where there are still some delicate issues to resolve.