Department Colloquium

Speaker: Andrew Fiori, Queen’s University
Date: Friday, November 28
Time: 2:30 p.m.
Place: Jeffery 234
Title: Non-equidistribution of irreducible factors of minimal polynomials of j-invariants of CM-elliptic curves

Abstract: If the roots of a family of polynomials are equidistributed one would naturally expect the irreducible factors to be as well. The reduction of the j-invariants of CM-elliptic curves at supersingular primes are known to be "equidistributed" among "possible" values. This would tend to suggest (though does not guarantee) that if we consider P(X) the minimal polynomial of such a j-invariant, factor P(X) over the p-adic integers, and reduce the irreducible factors modulo p, then the reduction of these irreducible factors will be equidistributed among the "possible" values. Data appears to show that this is not the case.

In this talk we will give an overview of the beautiful theory which connects CM-elliptic curves with Galois theory for extensions of quadratic imaginary fields. We will explain the meaning of the various terms of this abstract. Finally, we will give our data which simultaneously illustrates the first equidistribution of roots we refer to and the failure of the equidistribution of our factors. Finally, we give a conjectural "explanation" for at least part of why this happens in the family we are considering.