

COLLOQUIUM

DEPARTMENT OF MATHEMATICS AND STATISTICS
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Introduction to the parity conjecture

Abstract

The rational solutions to a Diophantine equation defining an elliptic curve form a finitely generated abelian group. The main arithmetic invariant of the elliptic curve is the rank of this group, that is the number of generators of infinite order. Controlling the rank is very difficult and finding the rank in general remains an unsolved problem. As observed by Selmer in mid 20th century, the parity of the rank is much more well behaved, which is summarized by the “parity conjecture”. We will discuss this conjecture, its origin, consequences and current known results, and illustrate them with examples. We will end by discussing new results on parity of ranks of abelian surfaces.

Short Biography: Celine Maistret is a Senior Research Associate at the University of Bristol, UK. She is a number theorist, specializing in arithmetic of hyperelliptic curves and ranks of abelian surfaces. She completed her PhD at the University of Warwick under the supervisions of John Cremona and Vladimir Dokchitser.

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3:30 – 4:30 PM
Room 130 MSC