

FOK-SHUEN LEUNG
University of Waterloo

Rational points on split del Pezzo surfaces

Describing integer solutions to Diophantine equations, or rational points on algebraic varieties, is one of math's oldest and most fundamental themes. In 1989, Yuri Manin made a conjecture predicting the density of rational points on del Pezzo surfaces-rational varieties isomorphic to either $\mathbb{P}^1 \times \mathbb{P}^1$, or \mathbb{P}^2 blown up along up to nine points. Proofs of the conjecture exist for surfaces of relatively high degree, and for singular surfaces of low degree. Smooth surfaces of low degree have proven less tractable.

I will survey the state of Manin's conjecture, and describe some recent work giving a partial proof of the conjecture for a family of split non-singular quartic del Pezzo surfaces. No special knowledge of algebraic geometry will be required.