

Mini-Course on **Hasse principle for 100 % of diagonal conic bundle surfaces**

Speaker : Christopher Frei

Abstract: These lectures are based on joint work with Efthymios Sofos, in which we show that 100 % of diagonal conic bundle surfaces over the rational numbers, given by equations such as

$$f_1(t)x^2 + f_2(t)y^2 = f_3(t)z^2,$$

satisfy the Hasse principle. Here, the f_i are running over integer polynomials with fixed positive degrees, ordered by the absolute values of their coefficients. We construct detector functions for the existence of rational points on a given conic bundle, based on a modified version of the Hilbert symbol with strong cancellation properties. The main result is achieved through second-moment estimates of these detector functions and certain additive models thereof, by means of various techniques from analytic number theory. In the lectures, we give an overview of the relevant history, the structure, and the main technical innovations in the proof, assuming no advanced knowledge in analytic number theory.

Schedule :

Tuesday 7th April, 2:30pm to 4:30pm

Wednesday 8th April, 11am to 1pm