

An introduction to the Hasse principle through examples

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Abstract

The Hasse principle asks a very important question in the study of Diophantine equations: does the existence of real and p -adic solutions imply the existence of rational solutions? In this talk I will use examples of equations to motivate why this principle is useful and how it is linked to the geometry of the varieties defined by such equations. In particular, the connections between the Hasse principle and the arithmetic structure of elliptic curves will be discussed.

If time permits, I will explain how to construct explicit counterexamples to the Hasse principle as the homogeneous spaces associated to elliptic curves with non-trivial Tate-Shafarevich groups.

Time: 12 p.m, 19th January 2022

Location: B3.02

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