The Geometry of a Family of K3 Surfaces

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Abstract

The study of rational points on surfaces almost always begins with a geometric study of the object. In particular, when one wishes to determine the existence of a Brauer–Manin obstruction to the Hasse Principle, they must first determine the Picard lattice structure of the object. In this talk, we will give a rough outline of the Hasse Principle and the Brauer–Manin obstruction before discussing the geometry of the K3 surfaces with defining equation $w^2 = Ax^6 + By^6 + Cz^6 + D(xyz)^2$ for $A, B, C, D \in \mathbb{Q}$.