

ELLIPTIC FIBRATIONS OF A $K3$ SURFACE

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ABSTRACT

A $K3$ surface X is a compact, two-dimensional, complex manifold that has a nowhere zero holomorphic 2-form and is simply connected. An elliptic $K3$ surface consists of a $K3$ surface X together with a surjective morphism from X to \mathbb{P}^1 called an elliptic fibration. Each general fiber of an elliptic fibration is a smooth elliptic curve, and each elliptic curve forms a group. This group structure on each fiber gives a group law on the collection of holomorphic sections, which is called the Mordell-Weil group. In this expository talk, I will present some basic properties of elliptic fibrations of a $K3$ surface and the Mordell-Weil group.