**课程名称**：Mordell-Weil Theorem

**上课日期：**16 June – 18 June, 2023

**课程简介**：The aim of this series of lectures is to present and prove a beautiful theorem in arithmetic geometry, the Mordell-Weil Theorem. It states that the commutative group of rational points of an Abelian variety over the field of rational number is of finite rank. This theorem was proved by Mordell for elliptic curves in 1922 and a few years later generalized by Weil to Abelian varieties.

We will mostly concentrate ourselves to the element part of the proof using the notion of height on rational points of a projective space. The hard part (the weak Mordell-Weil theorem) requires some advanced tools in algebraic geometry and is not intended to be fully proved.

**教学进度安排:**

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| 各章节教学内容纲要 | 教学形式 | 学时数 |
| Introduction. Height in projective spaces | 课堂讲授 | 2 |
| Basic notion of algebraic varieties | 课堂讲授 | 2 |
| Elliptic curves, Abelian varieties | 课堂讲授 | 2 |
| Basic notion of number fields | 课堂讲授 | 2 |
| Proof of Mordell-Weil Theorem, the easy part | 课堂讲授 | 2 |
| Sketch of the proof of the hard part | 课堂讲授 | 2 |

**主讲教师及简介：**Professor Liu Qing（University of Bordeaux）

刘青是法国波尔多大学教授，2013年-2022年期间曾兼任厦门大学讲座教授。1987年博士毕业于法国波尔多大学，研究领域为代数几何与算术几何，著有一本颇有影响的教材《Algebraic Geometry and Arithmetic Curves》，在Inventiones mathematicae, Duke Mathematical Journal, Compositio Mathematica, Journal of Algebraic Geometry, Mathematische Annalen等重要期刊上发表多篇文章。曾是Journal de Théorie des Nombres de Bordeaux的编委。