

# 國立陽明交通大學應用數學系

## 學術演講公告

主講人：鄭堯 教授(淡江大學 數學系)

講題：An introduction to the Birch and Swinnerton-Dyer conjecture

時間：111 年 5 月 17 日(星期二) 下午 2:00 –3:00

遠距進行 Google Meet: [meet.google.com/aeo-prqy-kpy](https://meet.google.com/aeo-prqy-kpy)

### Abstract

Let  $E$  be an elliptic curve over  $\mathbb{Q}$ . Together with the point at infinity, the set of rational points  $E(\mathbb{Q})$  on  $E$  becomes an abelian group. By Mordell's theorem, the abelian group  $E(\mathbb{Q})$  is finitely generated and hence  $E(\mathbb{Q}) \cong \mathbb{Z}^r \oplus T$  for some finite (abelian) group  $T$  and an integer  $r \geq 0$  called the rank of  $E$ . It is known that the order of  $T$  is less than  $16$  and hence  $r$  measures the size of  $E(\mathbb{Q})$ . On the other hand, to  $E$  one can attach a Dirichlet series  $L(E, s)$  which originally only converges absolutely for  $\text{Re}(s) > 3/2$ .

By the Modularity theorem of Wiles et. al.,  $L(E, s)$  has holomorphic continuation to the whole complex plane and hence it makes sense to consider the order of vanishing  $r' \geq 0$  of  $L(E, s)$  at  $s=1$ . The celebrated Birch and Swinnerton-Dyer conjecture asserts that  $r=r'$ . In this talk, we will give an introduction to the Birch and Swinnerton-Dyer conjecture and also survey some of its recent developments.

敬請公告 歡迎參加

應用數學系 啟