

國立中正大學數學系
暨應用數學碩士班、統計科學碩士班
學 術 演 講

An introduction to the Birch and Swinnerton-Dyer conjecture

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Abstract

Let E be an elliptic curve defined over $\mathbb{Q}$. The set $E(\mathbb{Q})$ of rational points on E , with the point at infinity as its identity element, forms an abelian group. By Mordell's theorem, $E(\mathbb{Q})$ is finitely generated, and hence $E(\mathbb{Q}) \cong \mathbb{Z}^r \oplus T$ for some finite abelian group T and some integer $r \geq 0$, called the rank of E . It is known that the order of T is at most 16; hence, r may be regarded as a measure of the size of $E(\mathbb{Q})$. On the other hand, one can attach to E a Dirichlet series $L(E, s)$, which initially converges absolutely only for $\operatorname{Re}(s) > 3/2$. By the Modularity Theorem, proved by Wiles and others, $L(E, s)$ extends holomorphically to the entire complex plane. It therefore makes sense to consider its order of vanishing $r' \geq 0$ at $s=1$. The celebrated Birch and Swinnerton-Dyer conjecture asserts that $r=r'$. In this talk, we will provide an elementary introduction to the Birch and Swinnerton-Dyer conjecture and survey some of its recent developments.

日 期：115 年 10 月 29 日(星期四) 16:10~17:00

地 點：本校數學館 527 教室（嘉義縣民雄鄉大學路 168 號）

茶 會：15:30~16:00 數學館四樓 409 室舉行

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