

# XLII SEMANA DE LA MATEMÁTICA

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## **What's new (and old) about elliptic curves**

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### ABSTRACT

Elliptic curves arise in the most curious places, ranging from Mathematical Physics to Cryptography. In this talk, we will survey some recent advances on Number Theoretic aspects of these objects, due to Bhargava and others, and try to describe a number of interesting open problems. Specifically, we will discuss the “state-of-the-art” on the Birch and Swinnerton-Dyer conjecture, ranks of elliptic curves, both proven and conjectured, and recent work on computation of elliptic curves over number fields. This talk will be accessible to anyone with a basic background or interest in Number Theory.