



Einladung zum Mathematischen Kolloquium
im Rahmen der Berufungskommission
WisNa-W1-Mathematik

Am Freitag, dem 20. April 2018, spricht (pünktlich) um 8.00 Uhr im
Hörsaal IV der Fachrichtung Mathematik (Gebäude E2 4)

Dr. Rodolfo Venerucci
Universität Duisburg-Essen

über das Thema

**Rational points on elliptic curves and the Birch and
Swinnerton-Dyer**

Abstrakt: The Birch and Swinnerton-Dyer conjecture relates the arithmetic of elliptic curves defined over number fields to the analytic properties of their Hasse-Weil L -functions. It is the prototypical example of a deep web of conjectures proposed by Beilinson, Bloch-Kato, Deligne, Langlands et al. and connecting the arithmetic of Shimura varieties to the analytic properties of automorphic forms and L -functions.

The first part of the talk introduces the Birch and Swinnerton-Dyer conjecture for elliptic curves over the rationals and discusses the main results in support of it, encompassed by the recent spectacular advances due to Bhargava and his collaborators. These results rely crucially on Wiles' proof of the modularity theorem, which establishes a deep connection between elliptic curves and automorphic forms. Notably, modularity allows an explicit construction of rational points on elliptic curves, called Heegner points, which play a prominent role in the proofs of the aforementioned results. In the last part of the talk I discuss current projects with M. Bertolini and M. A. Seveso, aimed at studying analogues of the Heegner point construction for certain number fields. These analogues are partly conjectural and lend themselves to numerical verifications.

Interessenten sind zum Vortrag herzlich eingeladen.

Prof. Dr. Frank-Olaf Schreyer
stellvertretender Vorsitzender
der Berufungskommission