

Regulators of number fields and elliptic curves

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We will start with a couple of interesting lower bounds for the regulator of number fields coming from earlier works of Friedman and Silverman, and explain a finiteness property we derive from it. We then report on a recent collaboration with Autissier and Hindry: we prove that up to isomorphisms, there are at most finitely many elliptic curves defined over a fixed number field, with Mordell-Weil rank and regulator bounded from above, when the rank is at least 4. We will explain where the result comes from, and discuss links with the Birch and Swinnerton-Dyer conjecture and with asymptotics on the number of rational points of bounded height on elliptic curves.

References

- [1] P. AUTISSIER, M. HINDRY, F. PAZUKI, *Regulators of elliptic curves*, IMRN, 2019, to appear.
- [2] F. PAZUKI, *Heights and regulators of number fields and elliptic curves*, Publ. Math. Besançon, 2014.2, 2014, p. 47-62.