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*Explicit bounds on ranks and integral points of elliptic curves*

The famous theorem of Mordell states that the rank of an elliptic curve over  $\mathbb{Q}$  is finite. Using this result, Siegel proved that the number of integral points on elliptic curves is finite. In this talk, I will present results that give explicit bounds on the rank and on the number of integral points on an elliptic curve  $E$ , in terms of the discriminant of  $E$ . These results are joint work with M. Bhargava, T. Taniguchi, F. Thorne, J. Tsimerman, and Y. Zhao.