Summary: We show that for an elliptic curve $E$ defined over a number field $K$, the group $E(\mathbb{A}_K)$ of points of $E$ over the adele ring $\mathbb{A}_K$ of $K$ is a topological group that can be analyzed in terms of the Galois representation associated to the torsion points of $E$. An explicit description of $E(\mathbb{A}_K)$ is given, and we prove that for $K$ of degree $n$, ‘almost all’ elliptic curves over $K$ have an adelic point group topologically isomorphic to

$$(\mathbb{R}/\mathbb{Z})^n \times \hat{\mathbb{Z}}^n \times \prod_{m=1}^{\infty} \mathbb{Z}/m\mathbb{Z}.$$ 

We also show that there exist infinitely many elliptic curves over $K$ having a different adelic point group.

MSC:

11G05 Elliptic curves over global fields
11G07 Elliptic curves over local fields
11F80 Galois representations

Keywords:

elliptic curves; adelic points; Galois representation

Full Text: DOI

References:

[12] Zografou, Attiki, Greece E-mail: ath.angelakis@gmail.com Peter Stevenhagen Mathematisch Instituut Leiden Universiteit Postbus 9512 2300 RA Leiden, The Netherlands E-mail: psh@math.leidenuniv.nl

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.