Exposé court

84   *On CM values of modular functions that are S-units*

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This is joint work with Sebastián Herrero and Juan Rivera-Letelier [1].

Modular functions are meromorphic functions defined on the upper half plane, which are invariant under the action of a finite index subgroup of $SL_2(\mathbb{Z})$ (they also satisfy a suitable condition at the cusps). Classical examples are the j invariant (which classifies elliptic curves) and the λ invariant (which classifies elliptic curves together with a basis of the 2-torsion). A CM value of a modular function f is the image through f of an imaginary quadratic element of the upper half plane. When f is the classical j invariant, a CM value is called a singular modulus.

We show that, for any given finite set of prime numbers S, the set of CM values of j that are S-units is finite. On the other hand, the λ invariant has infinitely many CM values that are algebraic units (thus, in particular, S-units). In this talk, we will present a result and a conjecture towards the characterization of modular functions having only finitely many CM values that are S-units.

Bibliography

[1] S. Herrero, R. Menares, and J. Rivera-Letelier. There are at most finitely many singular moduli that are S-units, 2021, arXiv:2102.05041.