

(11)

Found congruence that might be necessary for Galois-representations and motivic questions:

$$\sum \eta_{20} \equiv L_{E_2}(s-18) L_{E_4}(s-4) \pmod{5}$$

$$\equiv L_{E_2}(s-18) L_{E_2}(s-3) \pmod{7}$$

$$\equiv L_{E_2}(s-18) L_{E_4}(s-2) \pmod{11}$$

and others.

6) Meaning of these congruences in terms of Galois representations

Another interesting phenomenon

The field discriminants of $\mathcal{H}_2(\Gamma_2)$ for $\mathcal{H} = 28, 30, 32$ contain only very few primes, either small or huge ones (30 digits)

7) Theoretical explanation for this phenomenon