Conrey, J. B.; Farmer, David W.; Odgers, B. E.; Snaith, N. C.

A converse theorem for $\Gamma_0(13)$. (English) [Zbl 1160.11024]


This article is a continuation of [Int. Math. Res. Not. 1995, No. 9, 445–463 (1995; Zbl 0849.11042)]. In the spirit of Weil’s converse theorem, the authors prove that a Dirichlet series $L(s)$ with a degree two functional equation

$$
\left(\frac{\sqrt{13}}{2\pi}\right)^s \Gamma(s)L(s) = \left(\frac{\sqrt{13}}{2\pi}\right)^{1-s} \Gamma(1-s)L(1-s)
$$

that is entire and bounded in vertical strips, is the Mellin transform of a cusp form $f$ of level 13, provided $L(s)$ has suitable Euler factors at 2 and 3.

The main point here is that although $\Gamma_0(13)$ is generated by 4 elements, no character twist of $L(s)$ is required. The proof uses some computations in the group ring $C[\text{GL}_2^+(R)]$ and a short, but tricky density argument.

Reviewer: Valentin Blomer (Göttingen)

MSC:

11F66 Langlands $L$-functions; one variable Dirichlet series and functional equations
11F11 Holomorphic modular forms of integral weight

Keywords:

converse theorem; functional equation; Euler product

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References:


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