

HYBRID BOUNDS FOR TWISTS OF $GL(3)$ L -FUNCTIONS

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Abstract: Let π be a Hecke–Maass cusp form for $SL(3, \mathbb{Z})$ and $\chi = \chi_1 \chi_2$ a Dirichlet character with χ_i primitive modulo M_i . Suppose that M_1, M_2 are primes such that $\max\{(M|t)^{1/3+2\delta/3}, M^{2/5}|t|^{-9/20}, M^{1/2+2\delta}|t|^{-3/4+2\delta}\}(M|t)^\varepsilon < M_1 < \min\{(M|t)^{2/5}, (M|t)^{1/2-8\delta}\}(M|t)^{-\varepsilon}$ for any $\varepsilon > 0$, where $M = M_1 M_2$, $|t| \geq 1$, and $0 < \delta < 1/52$. Then we have

$$L\left(\frac{1}{2} + it, \pi \otimes \chi\right) \ll_{\pi, \varepsilon} (M|t|)^{3/4-\delta+\varepsilon}.$$

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