Publ. Math. Debrecen
In-print:: Ref. no.: 9899 (2025), 1–1

Comparing zeros of distinct Dirichlet L-functions

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Abstract. For any $\theta > \frac{1}{3}$, we show that there are constants $c_1, c_2 > 0$ depending only on θ for which the following property holds. If χ_1, χ_2 are two distinct primitive Dirichlet characters mod q, and $T \ge c_1 q^\theta$, then $L(s, \chi_1)$ and $L(s, \chi_2)$ do not have the same zeros in the region

$$\mathcal{R} := \big\{ s = \sigma + it \in \mathbb{C} : 0 < \sigma < 1,\ T < t < T + c_2 q^\theta \log T \big\}.$$

For cubefree moduli q, the same result holds for any $\theta > \frac{1}{4}$.

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Mathematics Subject Classification: 11M06, 11M26.
Key words and phrases: Dirichlet L-functions, Dirichlet characters, nontrivial zeros.