

Year: 2019

Vol.: 95

Fasc.: 3-4

Title: Twisted quadratic moments for Dirichlet L -functions at $s = 2$

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Let c, n be given positive integers. Let $q > 2$ be coprime with c . Let X_q be the multiplicative group of order $\phi(q)$ of the Dirichlet characters modulo q . Set

$$M(q, c, n) := \frac{2}{\phi(q)} \sum_{\substack{\chi \in X_q \\ \chi(-1) = (-1)^n}} \chi(c) |L(n, \chi)|^2.$$

The goal of this paper is to explain how one can compute explicit formulas for $M(q, c, n)$ for given small integers n and c . As an example, we give explicit formulas for $M(q, c, 2)$ for $c \in \{1, 2, 3, 4, 6\}$, and for $M(p, 5, 2)$ for p a prime integer. As a consequence, we show that a previously published formula for $M(p, 3, 2)$ is false.

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