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A study of elliptic gamma function and allies. (English) Zbl 1440.11063
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Summary: We study analytic and arithmetic properties of the elliptic gamma function

$$\prod_{m,n=0}^{\infty} \frac{1 - x^{-1}q^{m+1}p^{n+1}}{1 - xq^m p^n}, \quad |q|, |p| < 1,$$

in the regime $p = q$, in particular, its connection with the elliptic dilogarithm and a formula of *S. J. Bloch* [Higher regulators, algebraic K -theory, and zeta functions of elliptic curves. Providence, RI: American Mathematical Society (AMS) (2000; [Zbl 0958.19001](#))]. We further extend the results to more general products by linking them to non-holomorphic Eisenstein series and, via some formulae of *D. Zagier* [Math. Ann. 286, No. 1–3, 613–624 (1990; [Zbl 0698.33001](#))], to elliptic polylogarithms.

MSC:

[11F27](#) Theta series; Weil representation; theta correspondences
[11G55](#) Polylogarithms and relations with K -theory

Cited in **2** Documents

Keywords:

[theta function](#); [elliptic gamma function](#); [elliptic dilogarithm](#); [elliptic polylogarithm](#)

Full Text: [DOI](#) [arXiv](#)

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