

**Zhang, Shou-Wu**

**Gross-Zagier formula for  $GL_2$ . II.** (English) [Zbl 1126.11026](#)

Darmon, Henri (ed.) et al., Heegner points and Rankin  $L$ -series. Papers from the workshop on special values of Rankin  $L$ -series, Berkeley, CA, USA, December 2001. Cambridge: Cambridge University Press (ISBN 0-521-83659-X/hbk; 0-511-20831-6/e-book). Mathematical Sciences Research Institute Publications 49, 191-241 (2004).

The author reviews the proofs in his previous papers: Gross-Zagier formula for  $GL_2$  [Asian J. Math. 5, No. 2, 183–290 (2001; [Zbl 1111.11030](#))] and Heights of Heegner points on Shimura curves [Ann. Math. (2) 153, No. 1, 27–147 (2001; [Zbl 1036.11029](#))]. He also deduces a new formula for the derivative at  $s = \frac{1}{2}$  of the Rankin  $L$ -series associated to a Hilbert newform over a totally real algebraic number field, in terms of heights of CM-points on appropriate Shimura varieties. These results should have applications to the Birch and Swinnerton-Dyer conjecture,  $p$ -adic  $L$ -series and Iwasawa theory.

For the entire collection see [[Zbl 1051.11004](#)].

Reviewer: [Florin Nicolae \(Berlin\)](#)

**MSC:**

- [11F67](#) Special values of automorphic  $L$ -series, periods of automorphic forms, cohomology, modular symbols
- [11G18](#) Arithmetic aspects of modular and Shimura varieties
- [11G40](#)  $L$ -functions of varieties over global fields; Birch-Swinnerton-Dyer conjecture
- [11F41](#) Automorphic forms on  $GL(2)$ ; Hilbert and Hilbert-Siegel modular groups and their modular and automorphic forms; Hilbert modular surfaces
- [11F66](#) Langlands  $L$ -functions; one variable Dirichlet series and functional equations

Cited in **4** Reviews  
Cited in **5** Documents

**Keywords:**

[Rankin  \$L\$ -series](#); [Shimura curves](#); [CM-points](#); [special values](#)

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