

Stienstra, Jan

Mahler measure variations, Eisenstein series and instanton expansions. (English)

[Zbl 1118.11047](#)

Yui, Noriko (ed.) et al., Mirror symmetry V. Proceedings of the BIRS workshop on Calabi-Yau varieties and mirror symmetry, December 6–11, 2003. Providence, RI: American Mathematical Society (AMS); Somerville, MA: International Press (ISBN 0-8218-4251-X/pbk). AMS/IP Studies in Advanced Mathematics 38, 139-150 (2006).

In this paper an intriguing relation is presented between the coefficients of Eisenstein series in *F. Rodriguez Villegas's* paper [Modular Mahler measures. I. Topics in number theory. In honor of B. Gordon and S. Chowla. Proceedings of the conference, Pennsylvania State University, University Park, PA, USA, July 31-August 3, 1997. Dordrecht: Kluwer Academic Publishers. Math. Appl., Dordr. 467, 17–48 (1999; [Zbl 0980.11026](#))] and on the other hand the instanton numbers in papers on “non-critical strings” by Klemm-Mayr-Vafa and Lerche-Mayr-Warner. In the companion paper [Mahler measure, Eisenstein series and dimers. Mirror symmetry V. Proceedings of the BIRS workshop on Calabi-Yau varieties and mirror symmetry, December 6–11, 2003. Providence, RI: American Mathematical Society (AMS); Somerville, MA: International Press. AMS/IP Studies in Advanced Mathematics 38, 151–158 (2006) reviewed below] the same author relates Mahler measures to dimer models. So the relation pointed out in the present paper could be an incarnation of the duality between string models and dimer models proposed by [A. Okounkov, N. Reshetikhin and C. Vafa, Quantum Calabi-Yau and classical crystals. The unity of mathematics. In honor of the ninetieth birthday of I. M. Gelfand. Papers from the conference held in Cambridge, MA, USA, August 31–September 4, 2003. Boston, MA: Birkhäuser. Progress in Mathematics 244, 597–618 (2006; [Zbl 1129.81080](#))].

For the entire collection see [[Zbl 1104.14001](#)].

Reviewer: [Anton Deitmar \(Tübingen\)](#)

MSC:

- [11R99](#) Algebraic number theory: global fields
- [11F11](#) Holomorphic modular forms of integral weight
- [14J32](#) Calabi-Yau manifolds (algebraic-geometric aspects)
- [14J81](#) Relationships with physics
- [82B41](#) Random walks, random surfaces, lattice animals, etc. in equilibrium statistical mechanics

Cited in **6** Documents

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