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Averaging toroidal orbifolds with torsion

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Recently, the correspondence between an ensemble average over two—dimensional Narain conformal field theories and an “exotic” bulk theory of gravity was established by Maloney and Witten and by N. Afkhami-Jeddi, H. Cohn, T. Hartman, and A. Tajdini. This has been generalized to specific torodial orbifolds by N. Benjamin, C. A. Keller, H. Ooguri, and I. G. Zadeh. We test this correspondence further by comparing again averaged (over Narain moduli space) partition functions of more general orbifolds $(Z_N \times Z_M)$, where discrete torsion arises, to bulk Chern—Simons partition functions. We are especially interested in the factorisable case $(T^2 \times T^2 \times T^2)/(Z_2 \times Z_2)$ as this directly relates to a Calabi Yau geometry and gives rise to terms in which the structure of the Eisenstein series play an interesting role.

Summary

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