

NEW PERSPECTIVES IN
CONFORMAL FIELD THEORY AND GRAVITY

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The Lion, the Witch, and the Wormhole: Ensemble averaging the symmetric product orbifold

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We consider the ensemble average of two dimensional symmetric product orbifold CFTs $\text{Sym}^N(\mathbb{T}^D)$ over the Narain moduli space. We argue for a bulk dual given by N copies of an abelian Chern-Simons theory coupled to topological gravity, endowed with a discrete gauge symmetry exchanging the N copies. As a check of this proposal, we calculate the ensemble average of various partition and correlation functions of the symmetric product orbifold theory and compare the resulting expressions to gauge theory quantities in the bulk. We comment on the ensemble average of the tensionless string partition function on $\text{AdS}_3 \times S^3 \times \mathbb{T}^4$ by considering the specific case of $D = 4$ with the addition of supersymmetry.

Summary

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