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An AdS/CFT correspondence at all worldsheet topologies

The tensionless limit of string theory on $\text{AdS}_3 \times S^3 \times T^4$ with pure NS-NS flux enjoys many remarkable properties that makes it an ideal candidate for study as a holographic model. In particular, its 2D CFT dual is exactly known, and powerful techniques for calculating correlation functions on the worldsheet have been developed, making the duality between these two theories manifest. Recently, a class of worldsheet boundary states describing bulk D-branes have been explored, and have been shown to correspond to boundary states in the dual CFT. We explore worldsheet correlation functions around these D-brane backgrounds, and show that they naturally reproduce the expected dual CFT answer to all orders in the genus expansion. We also consider the contribution of bulk O-planes and their corresponding crosscap states on the worldsheet, and demonstrate how to calculate the non-oriented worldsheet correlators on these backgrounds, which also have a natural interpretation on the dual CFT. As such, we provide evidence of this particular incarnation of the AdS/CFT correspondence for a wide range of worldsheet topologies, including unoriented worldsheets, worldsheets with boundary, and worldsheets with arbitrary genus.

Based on arXiv:2110.05509 and work in progress.

Type of contribution

Contributed Talk or Poster

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