

Bootstrapping the AdS Virasoro-Shapiro amplitude

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The formulation of the worldsheet theory for type IIB strings on AdS₅×S⁵ remains an important open problem. Luckily, at least the corresponding AdS Virasoro-Shapiro amplitude can be bootstrapped in a small curvature expansion. I will describe how this is achieved by demanding consistency with both the OPE for the holographically dual CFT as well as worldsheet intuition. We explicitly constructed the first two curvature corrections, which take the form of a genus zero worldsheet integral involving single-valued multiple polylogarithms. Our answer reproduces the CFT data for unprotected operators in planar N=4 SYM theory at strong coupling available from integrability and the localization results for the low energy expansion. Furthermore, the high energy limit of the AdS Virasoro-Shapiro amplitude agrees with a classical scattering computation in AdS.

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