

High energy scattering of strings in AdS

Monday, May 20, 2024 1:45 PM (1 hour)

When studying string scattering in flat space, we rely on a world-sheet description, yet extending this to curved backgrounds poses nontrivial challenges. In this talk, we discuss how to compute string amplitudes on AdS as a curvature expansion around flat space and emphasize the pivotal role of single valuedness, akin to its significance in flat space. Specifically, we focus on the AdS Virasoro-Shapiro amplitude and start from its recent representation as a world-sheet integral. We take the next step towards a world-sheet theory in AdS by investigating the high-energy regime. As in flat space, this is accessed by saddle point techniques. Moreover, the path integral representation for the amplitude is dominated by a classical solution. Our algorithm computes AdS classical solutions to arbitrary order in a $1/R$ expansion, where R is the radius of AdS, in terms of single-valued multiple polylogarithms whose letters are the locations of the punctures. Finally, we show that AdS curvature corrections exponentiate in this limit!

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