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Perturbative and numerical aspects of string sigma models

In the last fifteen years an extensive and successful program has been carried out, consisting in the application of integrability techniques to the study of the AdS/CFT correspondence in the planar limit. In this talk we focus on a particular string background corresponding, on the dual side, to the expectation value of a cusped Wilson line. Recently the study of this background has been boosted by the OPE program for polygonal Wilson loops and scattering amplitudes. In this talk we consider the quantum fluctuations of the worldsheet theory around the null cusp classical solution and we investigate various quantities of physical interest (free energy, dispersion relation, S-matrix) in the perturbative expansion at strong coupling. We also propose a possible discretization of this model which can be used to study the theory non-perturbatively through numerical lattice simulations.