Strong coupling results in the planar AdS5/CFT4 correspondence from the numerical solution of the Quantum Spectral Curve equations

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One of the most important problems in the planar AdS5/CFT4 correspondence is the analytic solution of the spectral problem in the strong coupling limit. The recently discovered Quantum Spectral Curve (QSC) method made it possible to solve the spectral problem analytically in various important limits like in the weak coupling, small spin and BFKL, etc. limits, but the direct analytic strong coupling expansion still lacks. In such cases the numerical solution of the problem can help to gain insight into the structure of the solutions. In my talk I summarize the most important numerical results obtained for the even spin twist-2 single trace operators of the sl(2) sector of the theory. I will demonstrate that the high precision numerical solution of the QSC equations allows one to gain insight into the strong coupling behavior of the solutions. Namely, I show that high precision numerical solutions of the QSC equations reproduce the analytical predictions for the first few coefficients in the strong coupling expansion of the anomalous dimensions obtained from matching small spin and quasi-classical string solutions. Moreover high precision numerical data allowed us to propose a strong coupling series representation for the P-functions, which are the fundamental functions of the QSC description. The careful analysis of the validity of this series sheds light on the main difficulty of finding the analytical solution of the QSC equations at strong coupling. Eprint: arXiv:1604.02346