

Multiloop Baxter equations and Quantum Spectral Curve

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In this talk we discuss solutions of multiloop Baxter equations arising in quantum spectral curve description of various supersymmetric quantum field theories. We are interested in perturbative solution for anomalous dimensions of operators in $sl(2)$ sector at arbitrary spin values. For these types of problems we propose a new method for the solution of mentioned nonhomogeneous second order difference equations directly in spectral parameter u -space for in principle arbitrary loop order. As an example we consider ABJM model and anomalous dimensions of twist 1 operators up to six loop order. The solution involves new highly nontrivial identities between hypergeometric functions, which may have various other applications. We expect this method to be generalizable to operators of other twists as well as to other theories, such as $N=4$ SYM.

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