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Talk: Constructing perturbative long-range deformations of spin chains.

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Integrable spin chains play an important role, both in condensed matter and in high-energy physics. The presence of integrability allows us to apply several advanced techniques to address problems in these fields, especially when the Hamiltonians have nearest-neighbour interactions. When the Hamiltonians have interaction of range higher than two, however, there are several points that remain to be understood.

In this talk, I will explain a method to systematically construct perturbatively long-range deformations of spin chains. I will apply the method to perturbatively construct the Lax pair and the R-matrix for up to three loops for the su(2) sector in planar N=4SYM and discuss further applications and open problems.

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