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Spin chains for N=2 quiver theories

Integrability of gauge theories in the planar limit is a very powerful property which allows for a complete determination of the spectrum of the theory, but so far it has mostly been relevant for the most supersymmetric theory, $\mathcal{N} = 4$ super Yang-Mills and we would like to extend this to a much larger class of theories. In this talk, I will focus on $\mathcal{N} = 2$ superconformal theories obtained by orbifolding $\mathcal{N} = 4$ super Yang-Mills and then marginally deforming by varying the values of the couplings. We have determined the Lagrangians of these theories in terms of factors arising from the representation theory of the discrete groups and deformation parameters. From these Lagrangians, we were able to determine the corresponding dilatation operator for the theories, in terms of the representation theory factors and deformation parameters. It is known that, before marginally deforming, the integrability structure of the N=4 SYM is retained by these theories. Our results are the first step to determining whether or not this structure remains after marginal deformations.

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