

Yang-Baxter σ -models, conformal twists, and noncommutative Yang-Mills theory

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Abstract

© 2017 American Physical Society. The Yang-Baxter σ -model is a systematic way to generate integrable deformations of $AdS_5 \times S^5$. We recast the deformations as seen by open strings, where the metric is undeformed $AdS_5 \times S^5$ with constant string coupling, and all information about the deformation is encoded in the noncommutative (NC) parameter Θ . We identify the deformations of AdS_5 as twists of the conformal algebra, thus explaining the noncommutativity. We show that the unimodularity condition on r -matrices for supergravity solutions translates into Θ being divergence-free. Integrability of the σ -model for unimodular r -matrices implies the existence and planar integrability of the dual NC gauge theory.

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