

Deformations of $T^{1,1}$ as Yang–Baxter sigma models

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Yang–Baxter sigma models are recognized as a powerful formulation of deformations of the two-dimensional non-linear sigma models. If the original model is classically integrable, then the deformed model is also integrable. Thus, this is an integrable deformation. In this talk, as an important generalization, we consider a non-integrable sigma model in the Yang–Baxter sigma model approach. In particular, we explain a family of deformations of 5D Sasaki–Einstein manifold $T^{1,1}$ rather than the 5-sphere S^5 . For this purpose, we firstly describe $T^{1,1}$ as a supercoset. We will also give a physical interpretation of the supercoset. Secondly, we consider 3-parameter deformations of $T^{1,1}$ by using classical r -matrices satisfying the classical Yang–Baxter equation (CYBE). The resulting metric and NS–NS two-form completely agree with the ones previously obtained via TsT (T-dual – shift – T-dual) transformations, and contain the Lunin-Maldacena background as a special case. Hence our result indicates that the Yang–Baxter sigma model approach is applicable even for non-integrable cosets.