

# Yang–Baxter deformations of Minkowski spacetime

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In this talk, we introduce Yang–Baxter deformations of 4D Minkowski spacetime. The Yang–Baxter sigma model description was originally developed for principal chiral models based on a modified classical Yang–Baxter equation. It has been extended to coset curved spaces and models based on the usual classical Yang–Baxter equation. It would be very interesting to generalize deformations of this type to the case of flat space. However, for flat space, there is the obvious problem that the standard bilinear form degenerates if we employ the familiar coset Poincaré group/Lorentz group. Instead we consider a slice of  $\text{AdS}_5$  by embedding the 4D Poincaré group into the 4D conformal group  $\text{SO}(2, 4)$ . With this procedure we obtain metrics and  $B$ -fields as Yang–Baxter deformations which correspond to well-known configurations such as  $T$ -duals of Melvin backgrounds, Hashimoto–Sethi and Spradlin–Takayanagi–Volovich backgrounds, the  $T$ -dual of Grant space, pp-waves, and  $T$ -duals of  $\text{dS}_4$  and  $\text{AdS}_4$ . Finally we consider a deformation with a classical  $r$ -matrix of Drinfeld–Jimbo type and explicitly derive the associated metric and  $B$ -field which we conjecture to correspond to a new integrable system. This talk is based on arXiv:1505.04553.