

# Hybrid classical integrability in squashed sigma models

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We show that  $SU(2)_L$  Yangian and  $q$ -deformed  $SU(2)_R$  symmetries are realized in a two-dimensional sigma model defined on a three-dimensional squashed sphere. These symmetries enable us to develop the two descriptions to describe its classical dynamics, 1) rational and 2) trigonometric descriptions. The former 1) is based on the  $SU(2)_L$  symmetry and the latter 2) comes from the broken  $SU(2)_R$  symmetry. Each of the Lax pairs constructed in both ways leads to the same equations of motion. The two descriptions are related one another through a non-local map.

Comments: 12 pages, LaTeX, typos corrected and references added, further clarification added

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