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η-Deformation of the AdS5×S5 Pure Spinor Superstring

It is well known that the $AdS_5 \times S^5$ superstring equations of motion either in the Green-Schwarz (GS) or in the pure spinor (PS) formulation can be cast into a zero curvature equation satisfied by a Lax pair.
Recently significant progress has been made in deforming the $AdS_5 \times S^5$ structure of the GS superstring while preserving the integrability and its local symmetries. The η-deformation describes a string moving in a generalized supergravity background, and its main ingredient is a linear operator which solves the modified classical Yang-Baxter equation.
In this work we present an integrable deformation of the $AdS_5 \times S^5$ PS superstring based on homological perturbation theory. The resulting model describes a PS superstring in a η-background. Its equations of motion, Lax connection and BRST symmetry are discussed. We found that the η-deformation of the superstring is produced by the perturbative action of one state in the cohomology of $AdS_5 \times S^5$.

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