

High Energy Physics - Theory

Supergravity as Generalised Geometry I: Type II Theories

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We reformulate ten-dimensional type II supergravity as a generalised geometrical analogue of Einstein gravity, defined by an $O(9,1) \times O(1,9) \subset O(10,10) \times \mathbb{R}^+$ structure on the generalised tangent space. Using the notion of generalised connection and torsion, we introduce the analogue of the Levi-Civita connection, and derive the corresponding tensorial measures of generalised curvature. We show how, to leading order in the fermion fields, these structures allow one to rewrite the action, equations of motion and supersymmetry variations in a simple, manifestly $\text{Spin}(9,1) \times \text{Spin}(1,9)$ -covariant form.

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