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Constraining torsion theories with Weyl (gauge) invariance

Thursday 8 February 2024 13:00 (1h 30m)

Torsionful theories of gravity with local SO(3,1)xD(1) invariance generally propagate two vector degrees of freedom, i.e., the torsion vector and the Weyl vector potential. We show that these are tightly intertwined by imposing a projective symmetry on the theory: this enables us to get rid of the Weyl potential and to interpret the torsion vector as the connection 1-form for Weyl gauge invariance. By further imposing a second type of projective invariance we can get rid of the torsion vector too, obtaining a conformal theory. Thence, we focus on the tensor irrep of the torsion, which is unaffected by Weyl transformations, and we derive its conformal quadratic action. We conclude by making remarks about the general features of Weyl gauge invariant theories with torsion.

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