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DBI action of real linear superfield in 4D N=1 conformal supergravity

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The Dirac-Born-Infeld (DBI) action play important roles in the context of string theory. In the string theory, an effective action of D-brane is described by a DBI-type action, which consists of Maxwell terms as well as the ones of scalar fields in general. From a phenomenological and theoretical viewpoint, the embedding of the DBI action into supersymmetry (SUSY) or supergravity (SUGRA) is interesting. However, in 4D $N = 1$ SUGRA,
there has never been such extension of the DBI action for scalar fields.
In this talk, we discuss the construction of the DBI action for scalar fields, using a real linear multiplet in 4D $N = 1$ supergravity. Based on conformal supergravity, we derive the general condition under which the DBI action can be realized, and show that
it can be constructed in the new minimal supergravity. We also generalize it to the matter coupled system.

Summary

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