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Inconsistencies in nonsymmetric gravity theories

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ABSTRACT

In [1] we classified all the first-order vertices of gravity consistently coupled to a system of 2-form gauge fields by computing the local BRST cohomology $H(s|d)$ in ghost number 0 and form degree n. We found that all the consistent deformations are at most linear in the undifferentiated 2-form. These results confirm the previous proof of [2] that geometrical theories constructed from a nonsymmetric gravity theory are physically inconsistent or trivial. No assumption has been made on the degree of homogeneity in the derivatives or on the form of the gravity action.