Debraj Roy
S.N. Bose National Centre for Basic Sciences, Kolkata

Trivial symmetries in models of gravity

Authors: Debraj Roy

We perform a systematic construction of off-shell gauge symmetries of the action in a total hamiltonian formalism. Since the systems analysed are models of gravity (in Riemann-Cartan spacetime with torsion), there is an underlying Poincare symmetry, also off-shell. Comparison is made between this underlying Poincare symmetry and the hamiltonian symmetries constructed systematically. Though both the symmetries are themselves off-shell, it has been noted in literature that the two symmetries become equivalent only on-shell. But does this imply that there are really two independent sets of symmetries? We show here that the hamiltonian and Poincare symmetries are actually equivalent to each other, modulo trivial gauge symmetries.
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