

# LOCAL CONSERVATION LAWS IN A NONLINEAR ELECTRODYNAMICS

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## S u m m a r y

By using a generalization of the Lie–Poisson brackets for the dual Maxwell and Born–Infeld field strength tensors, we construct the gauge invariant axial-vector conserved currents for Born–Infeld and Heisenberg–Euler nonlinear electrodynamics in the 4-dimensional Minkowski space-time. The infinite hierarchies of the currents given by Lie brackets for generally covariant conserved vector and axial vector currents are established. These currents are conserved upon action of the gravitational fields, but the conservation is broken in the Einstein–Cartan theory (over a Riemann–Cartan space-time). The axial-vector currents are conserved only in the  $(3 + 1)$ -dimensional space-time.