Miami Physics Conference 2022

Dmitri Sorokin

Title: Aspects of maximally symmetric non-linear (ModMax) electrodynamics

We will review properties and peculiarities of a recently found unique non-linear generalization of Maxwell's electrodynamics (dubbed ModMax) that preserves all the symmetries of the former, i.e. conformal invariance and electric-magnetic duality. In particular, we will see that ModMax admits, as exact solutions, plane waves and Lienard-Wiechert fields induced by a moving electric or magnetic particle, or a dyon; effects of ModMax may manifest themselves in physical phenomena such as vacuum birefringence and in properties of gravitational objects (e.g. charged black holes); ModMax and its Born-Infeld-like generalization arise as TTbar-like deformations of Maxwell's theory and there exist supersymmetric and higher-spin extensions of these models.