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Lorentz gauge theory and its phenomenological implications ORCHIDEA MARIA LECIAN, GIOVANNI MONTANI, ICRANet and Dipartimento di Fisica - Università di Roma "La Sapienza" — A gauge theory of the Lorentz group, based on the different behaviour of spinors and vectors under local space-time transformations, is formulated. The role of the torsion field within this gauge scheme is discussed and Lorentz connections are identified with suitable bein projections of the contortion field. Our approach predicts a propagating torsion field having the density spin current as a source, and, in this sense, provides an extension of the U^4 theory. An application of this theory to an accelerated beam of electrons is proposed; therefore, an upper limit to the Lorentz interaction coupling constant is discussed.

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