The Effective Chiral Lagrangian with Lorentz Violation[1] RASHA
KAMAND, Univ of South Carolina — Despite its many successes, the Standard
Model (SM) is still incomplete and is thought to be only a part of a broader picture
that hides within it new physics. In the 1990s, a framework based on low-energy
effective field theory (EFT) that allows for the investigation of Lorentz violation in
any sector of the SM was developed. It is known as the Standard Model Extension
(SME). The SME Lagrangian is written down using elementary particles degrees of
freedom, namely quarks, leptons and gauge bosons. Using the chiral symmetry prop-
erties of the quark fields and matching them onto the hadronic degrees of freedom,
we construct part of the SME Lagrangian employing hadronic fields, in particular
pions and nucleons, within the framework of chiral EFT. Our construction includes
both pion and pion-nucleon cases where chiral symmetry results in interaction terms
between pions that have not been considered before.

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