

Lorentz-violating Rarita-Schwinger model

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We formulate the simplest Lorentz-breaking extension for the spin-3/2 field theory and couple it to the Abelian gauge field in a Lorentz violating (LV) manner. Next, we calculate the lower LV quantum corrections, that is, the Abelian Carroll-Field-Jackiw (CFJ) term, which, being superficially divergent, turns out to be finite but ambiguous, and also the higher-derivative CFJ term. Besides, we compute the aether term, being the lowest CPT-even LV term, involving the second order in the LV vector. Afterwards, we generalize this study for the non-Abelian case and generate the non-Abelian generalization of the Carroll-Field-Jackiw (CFJ) term.