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Probing new physics with charge asymmetries in 2 same sign leptons plus jets final states

Monday, 21 August 2023 16:30 (15 minutes)

We study the impact of three different BSM models in the charge asymmetry defined for the 2SSℓ (with $\ell = e, \mu$) with jets ($n_j \geq 2$) final state at the LHC, at $\sqrt{s} = 13$ TeV, where the main SM contribution is the $t\bar{t}W$ production. We consider the impact of a heavy neutral scalar/pseudoscalar arising from a 2HDM model; a simplified RPV MSSM model with electrowikino production (Higgsino or wino-like); and an effective theory with dimension 6 four-quark operators. We propose measuring the charge asymmetries differentially with respect to different kinematic observables, and inclusively/exclusively with the number of b-tagged jets in the final state ($n_b \geq \{1, 2, 3\}$). We show that the 2HDM and the four quark operator schemes may be sensitive to the detection of new physics, even for an integrated luminosity of 139 fb^{-1}

Collaboration / Activity

Phenomenology

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