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Distinguishing Standard Model Extensions using MonoTop Chirality at the LHC RYAN MUELLER, Texas AM University, ROUZBEH ALLAHVERDI, University of New Mexico, MYKHAILO DALCHENKO, BHASKAR DUTTA, Texas AM University, ANDRS FLREZ, Universidad de los Andes, YU GAO, TERUKI KAMON, Texas AM University, NIKOLAY KOLEV, University of Regina, MANUEL SEGURA, Universidad de los Andes — Spectral analysis of the top quark final states is a promising method to distinguish physics beyond the standard model (BSM) from the SM. Many BSM physics with top quark final states feature top quarks with right or left handed polarized helicity. The energy spectrum of the top quark decay products can be used to distinguish the top quark helicity. A Delphes simulation of a minimal standard model extension featuring a color scalar triplet that decays into a left handed top and a dark matter (DM) candidate is compared with a right handed model to demonstrate how such an energy spectrum varies and differentiates models. Both the hadronic and leptonic decay channels of the top quark are considered in the analysis. In the hadronic channel the right and left handed models are separated at 95% CL with a production cross section of 20 fb and 100 fb^{-1} integrated luminosity of 13 TeV proton-proton collisions at the LHC.

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