

Dark matter at the LHC: EFTs and gauge invariance

Friday 28 August 2015 16:50 (20 minutes)

Effective field theory (EFT) formulations of dark matter interactions are a convenient and popular way to quantify LHC bounds on dark matter. However, some EFT operators considered do not respect the weak gauge symmetries of the Standard Model. These operators break down at the electroweak scale, rather than the energy scale of new physics, and are invalid at LHC energies. We carefully discuss the circumstances in which such operators can arise, and use the mono- W process to illustrate potential issues in their interpretation and application. We also discuss a simple UV complete model that avoids such difficulties.

Authors: DENT, James (University of Louisiana at Lafayette); BELL, Nicole (University of Melbourne); LEANE, Rebecca (University of Melbourne); WEILER, Tom (Vanderbilt University); CAI, Yi (University of Melbourne)

Presenter: LEANE, Rebecca (University of Melbourne)

Session Classification: Particle Cosmology

Track Classification: Particle Cosmology Theory and Experiment