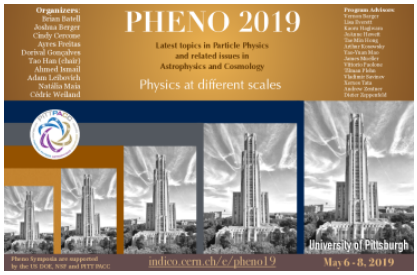

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Improved constraints on a simplified model of Majorana Dark matter

Tuesday 7 May 2019 15:45 (15 minutes)

An interesting class of models posits that the dark matter is a Majorana fermion which interacts with a quark together with a colored scalar mediator. Such a theory can be tested in direct detection experiments, through dark matter scattering with heavy nuclei, and at the LHC, via jets and missing energy signatures. Motivated by the fact that such theories have spin-independent interactions that vanish at tree level, we examine them at one loop (along with RGE improvement to resum large logs), and find that despite its occurrence at a higher order of perturbation theory, the spin-independent scattering searches typically impose the strongest constraints on the model parameter space. We further analyze the corresponding LHC constraints at one loop and find that it is important to take them into account when interpreting the implications of searches for jets plus missing momentum on this class of models, thus providing the corresponding complementary information for this class of models.

Summary

Authors: MOHAN, Kirtimaan (Michigan State University); TAIT, Tim M.P. (University of California, Irvine); Prof. YUAN, C P (Michigan State University); Dr YAN, Bin (Michigan State University); Dr SENGUPTA, dipan (Michigan State University)

Presenter: MOHAN, Kirtimaan (Michigan State University)

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