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## Non-minimal Dark Sector Phenomenology: Dark Matter “Colliders”

*Tuesday, 9 May 2017 15:30 (15 minutes)*

I will talk about a novel dark matter (DM) detection strategy for the models with non-minimal dark sector. The main ingredients in the underlying DM scenario are a boosted DM particle and a heavier dark sector state. The relativistic DM impinged on target material scatters off inelastically to the heavier state which subsequently decays into DM along with lighter states including visible (Standard Model) particles. The expected signal event, therefore, accompanies a visible signature by the secondary cascade process associated with a recoiling of the target particle, differing from the typical neutrino signal not involving the secondary signature. I will discuss the detection prospects of this DM signal at current and future large volume neutrino detectors such as Super/Hyper Kamiokande and DUNE, as well as future fixed target experiments.

### Summary

I will talk about a novel dark matter (DM) detection strategy for the models with non-minimal dark sector such as “inelastic boosted dark matter”, which expects a secondary cascade signature after an inelastic and relativistic scattering of a light dark matter component. I will focus on the detection prospects in Super/Hyper Kamiokande and DUNE, along with brief overview in fixed target experiments.

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