



PHYSICS AND ASTRONOMY SEMINAR

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“Discovering Inelastic Thermal-Relic Dark Matter at Colliders”

Abstract

Dark Matter particles with inelastic interactions are ubiquitous in extensions of the Standard Model, yet remain challenging to fully probe with existing strategies. We propose a series of powerful searches at hadron and lepton colliders that are sensitive to inelastic dark matter dynamics. In representative models featuring either a massive dark photon or a magnetic dipole interaction, we find that the LHC and BaBar could offer strong sensitivity to the thermal-relic dark matter parameter space for dark matter masses between ~ 100 MeV-100 GeV and fractional mass-splittings above the percent level; future searches at Belle II with a dedicated monophoton trigger could also offer sensitivity to thermal-relic scenarios with masses below a few GeV. Thermal scenarios with either larger masses or splittings are largely ruled out; lower masses remain viable yet may be accessible with other search strategies.

Wednesday, December 9, 2015

3:00 p.m.

Elliott Building

Room 160