Phenomenology 2013 Symposium



Contribution ID: 211 Type: not specified

Collider searches for dark matter in events with electroweak bosons and missing energy

Monday 6 May 2013 15:30 (15 minutes)

Searches for dark matter at colliders typically involve signatures with energetic initial-state radiation without visible recoil particles. Searches for mono-jet or mono-photon signatures have yielded powerful constraints on dark matter interactions with Standard Model particles. I extend this to the mono-Z signature and reinterpret an ATLAS analysis of events with a Z boson and missing transverse momentum to derive constraints on dark matter interaction mass scale and nucleon cross sections in the context of effective field theories describing dark matter which interacts via heavy mediator particles with quarks or weak bosons.

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Session Classification: Cosmology