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LHC prospects for low mass ALP searches via bb final state

The current Large Hadron Collider (LHC) data shows no clear indication of new physics yet and only incremental improvements are anticipated in the foreseeable future. LHC has been constraining TeV scale physics but new physics could be hiding below the electroweak scale. There are well-motivated dark matter models which predict a light mediator, coupled with Standard Model (SM) fermions and dark matter. In particular, the light resonance, axion-like particle (ALP), is expected to decay dominantly into bb final state if the mass is O(10) GeV. A measurement for this kind of signature is challenging due to trigger requirements at the LHC. In this talk, I will discuss on probing these light resonances in bb final state using jet substructure techniques. I will also demonstrate strategies to improve the sensitivity by modifying trigger requirements at the LHC.

Secondary track

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