

Searching for long-lived particles at the LHC: Sixth workshop of the LHC LLP Community



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Classification of dark pion multiplets as dark matter candidates and displaced decays

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New confining sectors can contain a set of pseudo-Goldstone mesons that exhibit a complicated structure in terms of stability and relative masses. Stable ones can act as dark matter candidates, while their interactions with the unstable ones determine their relic abundances. The overall structure, by specifying which channels are kinematically forbidden or not, affects the cosmology, constraints and collider phenomenology. In this talk, I will show that these pseudo-Goldstone meson structures can be classified into three categories. I will also demonstrate that the unstable pions can lead to displaced vertices and that cosmology can be used to put an upper limit on their decay lengths that is roughly universal within a given category.

Primary author: Dr BEAUCHESNE, Hugues (Ben-Gurion University of the Negev)

Co-author: Dr GRILLI DI CORTONA, Giovanni (University of Sao Paulo)

Presenter: Dr BEAUCHESNE, Hugues (Ben-Gurion University of the Negev)