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Probing the chirality of dark matter at colliders with dark photon showering

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As conventional dark matter scenarios have been probed extensively so far, the physics of a light dark matter charged under a new gauge group (dark gauge group) becomes one of new research avenues in many theoretical and experimental studies. We examine properties of a dark photon showering, the radiation process of light gauge bosons from energetic dark matter particles produced at the Large Hadron Collider (LHC). This showering process provides different signatures at the LHC depending on the property of dark matter under the dark gauge group. We show that the LHC experiment can identify the chirality of a dark matter, which leads to understanding the mass origin of particles in the dark sector.

Summary

Primary author: PARK, Myeonghun (Institute for basic Science (KR))

Presenter: PARK, Myeonghun (Institute for basic Science (KR))

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