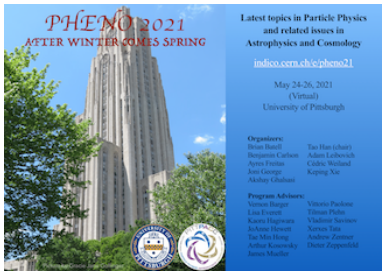

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Testing freeze-in with Z' bosons

Tuesday 25 May 2021 14:15 (15 minutes)

If dark matter particles interact too feebly with ordinary matter, they have never been able to thermalize in the early universe. Such Feebly Interacting Massive Particles (FIMPs) would be therefore produced via the freeze-in mechanism. Testing FIMPs is a challenging task, given the smallness of their couplings. In this talk, after giving a brief overview on the phenomenology of FIMPs, I will discuss our recent proposal of a Z' portal where the freeze-in can be currently tested by many experiments. In our model, Z' bosons with mass in the MeV-PeV range have both vector and axial couplings to ordinary and dark fermions. We constraint our parameter space with bounds from direct detection, atomic parity violation, leptonic anomalous magnetic moments, neutrino-electron scattering, collider, and beam dump experiments.

Summary

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