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# Testing freeze-in with $Z'$ bosons

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The freeze-in production of Feebly Interacting Massive Particle (FIMP) dark matter in the early universe is an appealing alternative to the well-known — and constrained — Weakly Interacting Massive Particle (WIMP) paradigm. Although challenging, the phenomenology of FIMP dark matter has been receiving growing attention and is possible in a few scenarios. In this talk, I will discuss a model of a  $Z'$  portal to fermionic dark matter, with the  $Z'$  having both vector and axial couplings to ordinary and dark fermions and a mass ranging from MeV up to PeV. I will show how the parameter space of this model can be constrained with bounds from direct detection, atomic parity violation, leptonic anomalous magnetic moments, neutrino-electron scattering, collider, and beam dump experiments.

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