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Complementarity between dark matter direct searches and CEν\nuνNS experiments in U(1)' models

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We explore the possibility of having a fermionic dark matter candidate within $U(1)'$ models for CEνNS experiments in light of the latest COHERENT data and the current and future dark matter direct detection experiments. A vector-like fermionic dark matter has been introduced which is charged under $U(1)'$ symmetry, naturally stable after spontaneous symmetry breaking. We perform a complementary investigation using CEνNS experiments and dark matter direct detection searches to explore dark matter as well as Z' boson parameter space. Depending on numerous other constraints arising from the beam dump, LHCb, BABAR, and the forthcoming reactor experiment proposed by the SBC collaboration, we explore the allowed region of Z' portal dark matter.

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