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# COHERENT production of a sterile fermion

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We consider the possible production of a new MeV-scale fermion at the COHERENT, LZ and XENONnT experiments. The new fermion, belonging to a dark sector, can be produced through the up-scattering process of neutrinos off the nuclei and the electrons of the detector material, via the exchange of a light mediator. We explore the possibility of generalized interactions, that is a scalar, pseudoscalar, vector, axial or tensor mediator. We perform a detailed statistical analysis of the COHERENT, LZ and XENONnT datasets and obtain up-to-date constraints on the couplings and masses of the dark fermion and mediators. Finally, we briefly comment on the stability of the dark fermion.

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