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Light vector mediators at direct detection experiments

Wednesday, 1 May 2024 15:00 (20 minutes)

Solar neutrinos induce elastic neutrino-electron scattering in dark matter direct detection experiments, resulting in detectable event rates at current facilities. In this talk, I will present an analysis of recent data from the XENONnT, LUX-ZEPLIN, and PandaX-4T experiments from which we derive stringent constraints on several U(1)′ extensions of the Standard Model, accommodating new neutrino-electron interactions. In particular, I will present bounds on the relevant coupling and mass of light vector mediators for a variety of anomaly-free U(1)′ models. I will also present forecasts for improving current bounds with a future experiment like DARWIN.

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