

The neutrino floor: a data-driven analysis

Dimitrios K. Papoulias

Department of Physics, National and Kapodistrian University of Athens, GR-15784, Greece

We revisit the discovery limit of multi-ton direct detection dark matter experiments in view of the recent measurement of coherent elastic neutrino-nucleus scattering (CEvNS) by the COHERENT experiment [1,2]. By relying on extracted values of the CEvNS cross section from actual data, we perform a data-driven determination of the neutrino floor considering potential deviations from the Standard Model (SM) expectation [3]. Beyond this, we explore the impact of nuclear and electroweak uncertainties [4] as well as we quantify the impact of interesting beyond the SM scenarios in the neutrino sector [5].

[1] A. D. Akimov et al. (COHERENT), *Science* **357**, 6356 (2017).

[2] D. Akimov et al. (COHERENT), *Phys. Rev. Lett.* **126**, 012002 (2021).

[3] D. K. Papoulias, *Phys. Rev. D.* **102**, 113004 (2020).

[4] R. Sahu, D.K. Papoulias, V.K.B. Kota, T.S. Kosmas, *Phys. Rev. C.* **102**, 03550 (2020).

[5] D. Aristizabal Sierra, V. De Romeri, L.J. Flores, D.K. Papoulias, *JCAP* **01**, 055 (2022).