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Scrutinizing the CEvNS analysis

The observation of coherent elastic neutrino nucleus scattering (CEvNS) by the COHERENT collaboration in 2017 has opened a new window to beyond the Standard Model physics and is used to test the Standard Model predictions at a different energy scale. However a careful statistical analysis is essential to derive correct constraints and bounds on new physics parameters. We perform a detailed analysis of the publicly available COHERENT CsI data making use of all available background data and calculate the p value of the Standard Model predictions using a test statistic. We find that the SM is a good fit.
As an example for the ability of this approach to test new physics scenarios we quantify the allowed ranges for non-standard interactions which is reduced in comparison to previous analysis.

Mini-abstract

An improved statistical analysis of the CEvNS process demonstrated on the example of the CsI data

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