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Borexino solar neutrino data as a probe of non-standard neutrino properties

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Neutrinos produced in the Sun can be used as a probe of neutrino physics beyond the Standard Model (BSM). In this study, two BSM processes are considered, namely, non-standard neutrino-electron interactions, and electromagnetic neutrino interaction caused by an anomalous magnetic moment. These processes may occur during both neutrino propagation through the solar matter and detection, causing distortions in solar neutrino fluxes, survival probability, interaction cross sections and other properties. In the Borexino experiment, possible impacts of the non-standard interactions of solar neutrinos to the data have been estimated using both interaction rate and spectral information. For the anomalous neutrino magnetic moment study, both neutrino and anti-neutrino datasets have been considered.

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