

Background models in the low energy region: TREX-DM and IAXO-D0 setups

TREX-DM and IAXO-D0 are gaseous TPC detectors equipped with Micromegas readout planes. TREX-DM is intended to search for low mass wimps while IAXO-D0 is a prototype of one of the detectors of the future IAXO (International Axion Observatory). In both cases, background models in the lowest energy region are essential to study the discovery potential of these experiments and to understand experimental data. To assess the expected background, all the relevant sources need to be considered, including the measured fluxes of gamma radiation, muons and neutrons at the Canfranc Laboratory (TREX-DM) or sea level (IAXO-D0), together with the activity of most of the components used in the detector and ancillary systems, obtained in a complete assay program. Dedicated analysis methods to discriminate signal and background events are also compulsory to lower background levels. The software tool used to analyse data and compute all the background contribution is REST, a data analysis framework fully integrated in ROOT and including libraries for the reconstruction and simulation of events in TPC-based detector systems. In this contribution, we will present background models for TREX-DM and IAXO-D0 detectors.

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