

Data selection strategy for the solar neutrino analysis with Borexino

The Borexino experiment at the INFN Gran Sasso Laboratory is following a rich solar neutrino physics program. The Borexino most recent results are the precise measurements of the ${}^7\text{Be}$, pep and pp solar neutrino fluxes as well as the observation of season modulation of the ${}^7\text{Be}$ solar neutrino rate. These results were derived from the so-called Borexino Phase-II data (i.e. data collected after some intense purification campaigns in 2010-2011) and were achieved thanks to advanced data analysis techniques that allowed to maximize the signal/noise ratio.

In this contribution, we present the data selection strategy of the Borexino solar neutrino analysis: we describe how the neutrino-like scintillation events are selected according to event-based cuts which eliminate most of the external and cosmogenic backgrounds. These cuts include the definition of a fiducial volume and time-correlation techniques with the muon veto events. Moreover, the spatial distribution of events and a β^+/β^- pulse shape discrimination variable are used in a multivariate fit approach to additionally constrain the residual cosmogenic ${}^{11}\text{C}$ and external backgrounds.

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