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Data analysis of a low-polonium-field for the discovery of CNO neutrinos

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Recently the first direct observation of CNO neutrinos was achieved with a high statistical significance. This challenging observation was made using the highly radiopure liquid-scintillator detector Borexino located in the Laboratori Nazionali del Gran Sasso in Italy. The spectral shape of CNO neutrino interactions in the liquid scintillator of the Borexino detector is very similar to that of the main background: intrinsic ^{210}Bi decays. The ensuing high correlations in Borexino's spectral fits make an independent determination of a ^{210}Bi constraint necessary in order to claim a measurement or discovery of CNO neutrinos. In this talk the methods used to extract the ^{210}Bi rate from ^{210}Po data, selected with pulse shape discrimination methods, are discussed, as well as how systematic uncertainties were treated.

Collaboration name

Borexino

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