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Borexino detector performances

Thursday, 8 July 2021 16:30 (25 minutes)

Borexino, a large volume detector for low energy neutrino spectroscopy, is currently taking data underground since 2007 at the Laboratori Nazionali del Gran Sasso, Italy. The main goal of the experiment is the real-time measurement of solar neutrinos, especially the low energy part of the spectrum. Neutrinos are detected via neutrino-electron scattering in an ultra-pure organic liquid scintillator. The light generated by the interaction is detected by 2212 phototubes.

During many years of data taking the experiment provided several remarkable results as the first evidence of pep neutrinos, the real-time detection of the pp neutrinos, the evidence of CNO neutrinos, and the detection of antineutrinos from the Earth. All these results are based on an accurate modelling of the detector's response and performances.

The contribution shows the design, the modelling of the detector's response, and the performances. Moreover it will be discussed how the performances and the response were studied by means of extensive calibration campaigns.

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Session Classification: Why and How the Sun and the Stars Shine: the Borexino Experiment

Track Classification: Fundamental Interactions and Stellar Evolution: Why and how the Sun and the Stars shine: the Borexino experiment