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A road to reach higher precision in Borexino: the detector calibration campaigns

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Borexino is an experiment designed for real-time detection of low energy solar neutrinos. It is installed at the Gran Sasso Underground Laboratory and started taking data in May 2007. So far, Borexino's main results are the first direct measurement of the 7Be solar neutrino signal rate, the measurement of the 8B solar neutrino flux, with 2.8 MeV energy threshold, and the observation of geo-neutrinos signal. Borexino is confirming the LMA-MSW solution of the neutrino oscillation scenario by providing new data about the neutrino survival probability as a function of the neutrino energy and proving the absence of a day-night
asymmetry in the 7Be neutrino signal. In this contribution I present the results of the detector calibration campaigns completed in 2009 by the Borexino collaboration. This work was carried out to better understand the detector response in order to improve the 7Be neutrino measurement. Several radioactive sources have been deployed within the inner part of the detector by means of a carefully designed insertion system. The sources were selected in order to study the detector response in the energy region between 122 keV and 7 MeV, with α, β, γ and neutrons.

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