

First detection of solar neutrinos from the CNO fusion cycle with the Borexino experiment

Borexino is a large-volume liquid-scintillator experiment designed for real-time detection of low energy solar neutrinos. It is located at Laboratori Nazionali del Gran Sasso (INFN) and started taking data in May 2007. This talk will report about the latest results of Borexino: the direct observation of neutrinos produced in the carbon-nitrogen-oxygen (CNO) fusion cycle in the Sun. The measurement was possible only after a dedicated campaign of hardware improvement aimed at stabilizing the thermal condition of the detector and at reducing the intrinsic radioactive backgrounds. The CNO cycle is the main nuclear engine in massive stars: this result is therefore crucial for the modeling of solar physics and confirms the existence of this process in the Universe. The details of the detector stabilization and the analysis strategy used by the Borexino collaboration for disentangling the spectral component of the CNO neutrinos from the residual backgrounds will be presented.

Working group

WG6

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