

Overview and accomplishments of the Borexino experiment

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The Borexino experiment is running at the Laboratori del Gran Sasso in Italy since 2007. Its technical distinctive feature is the unprecedented ultralow background of the inner scintillating core, which is the basis of the outstanding achievements accumulated by the experiment.

In this talk, after recalling the main features of the detector, the impressive solar data gathered so far by the experiment will be summarized, with special emphasis to the most recent and prominent result concerning the detection of the fundamental pp solar neutrino flux, which is the direct probe of the engine mechanism powering our star.

Such a milestone measurement puts Borexino in the unique situation of being the only experiment able to do solar neutrino spectroscopy over the entire solar spectrum; the counterpart of this peculiar status in the oscillation interpretation of the data is the capability of Borexino alone to perform the full validation across the solar energy range of the MSW-LMA paradigm.

The talk will be concluded highlighting the perspectives for the final stage of the solar program of the experiment, centered on the goal to fully complete the solar spectroscopy with the missing piece of the CNO neutrinos. If successful, such a measurement would represent the final crowning of the long quest of Borexino to unravel all the properties of the neutrinos from the Sun.

Presentation type

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Primary author(s) : Dr. RANUCCI, Gioacchino (INFN - MI)

Presenter(s) : Dr. RANUCCI, Gioacchino (INFN - MI)

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