

Results from Borexino on solar and geo-neutrinos

Thursday, July 5, 2018 9:00 AM (15 minutes)

Borexino 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 foundation for the outstanding achievements accumulated by this experiment.

In the present talk, after recalling the main features of the detector, the impressive solar data gathered so far by Borexino will be summarized.

Special emphasis will be given to the illustration of the recent release of the fluxes as stemming from the simultaneous real time spectroscopy of the neutrinos from the entire pp nuclear fusion chain in the Sun, opening with the remarkable 2.7% accuracy of the Be7 flux the era of precision measurements also in the realm of the sub-MeV solar neutrinos.

Such results put Borexino in the unique situation of being the only detector able to perform solar neutrino spectroscopy over the entire solar spectrum; the counterpart of this peculiar status, in the flavor conversion interpretation of the solar neutrino 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 with an account of the Borexino accomplishments in the geo-neutrino field, marked by the detection of the geo-neutrino signal with a significance as high as 5.9 sigma.

Primary author: GUFFANTI, Daniele (GSSI)

Presenter: GUFFANTI, Daniele (GSSI)

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