



PHYSIKALISCHES KOLLOQUIUM

Referent:

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Thema:

Deciphering the solar neutrino properties with Borexino

Zeit und Ort:

Dienstag, 18.6.2019, 16:40 Uhr
Recknagel-Bau, Hörsaal REC/C213, Haeckelstr. 3

Leiter:

Prof. Dr. Kai Zuber

Kurzfassung:

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 that it has accumulated over more than a decade of data taking.

In the present talk, after recalling the main features of the detector, the impressive solar neutrino data and results 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’s perspectives for the completion of the full solar neutrino study, by discussing its possibilities and potential reach for the yet undetected solar neutrinos from the CNO cycle.

Biographie:

Gioacchino Ranucci is Director for Technology at the Milan office of the “Istituto Nazionale di Fisica Nucleare”. He is an expert in experimental physics of neutrino, in which he operates from 1987 with the participation in experiments of international relevance conducted at the National laboratories of Gran Sasso. More recently, his field of interest has also included the direct experimental search for the hypothetical dark matter component of the universe. At the Gran Sasso Laboratory he currently serves as spokesperson of the Borexino experiment, after being from 2010 to 2015 co-spokesperson of the DarkSide detector. For the new Experimental JUNO initiative in China, he presently serves as deputy-spokesperson.

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