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## Measurement of $pp$ -chain Solar Neutrinos with Borexino

*Tuesday, 4 June 2019 12:20 (30 minutes)*

The Borexino detector, located at the Laboratori Nazionali del Gran Sasso in Italy, is a liquid scintillator detector with a primary goal to measure low-energy neutrinos created in the core of the Sun. In comparison to photons which need around hundred thousand years to reach the surface of the Sun, solar neutrinos are able to reach the earth around eight minutes after their creation. Thus, the solar neutrino measurement opens the window to understand the properties of the Sun, namely the fusion mechanisms ( $pp$ -chain and CNO cycle) or the metallicity problem, and generally to test the predictions of the standard solar model. Furthermore, it is possible to study neutrino oscillation parameters and search for non-standard interactions through the deviations from the Mikheyev-Smirnov-Wolfenstein-Large-Mixing-Angle scenario (MSW-LMA). To increase the sensitivity for  $pp$  and CNO neutrinos, the multivariate fit technique has been developed, which takes into account additional information of the radial and pulse shape distributions of events. The talk gives an introduction to the solar neutrino physics and discusses the recently published results for the  $pp$ ,  $pep$ ,  ${}^7\text{Be}$  and  ${}^8\text{B}$  neutrino rates as well as the perspective to measure the neutrinos from the CNO cycle. This talk is presented in the name of the Borexino Collaboration.

### Collaboration name

Borexino

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