Contribution ID: **105** Type: **not specified**

Breakthroughs in solar and neutrino physics from the Borexino experiment.

Monday, 3 September 2018 14:30 (25 minutes)

Borexino, with its very low background, due to an unprecedented radio-purity, is a unique experiment in studying the solar neutrinos since more than 11 years, producing important results in the solar and neutrino physics.
The mechanism that produces 99% of solar energy, i.e. the pp cycle, has been entirely measured determining the rates of all its the reactions: pp, 7Be, pep, 8B. This measurement has led several findings: 1) the measured rates are in good agreement with the SSM; 2) the comparison between neutrino flux and photon luminosity tests the solar stability at 105 time scale; 3) the comparison of the 7Be and 8B rates with the SSM previsions for high and low metallicity gives a hint in favor of high metallicity.
The ⊠e survival probability, measured at the various pp reactions energies, shows a good agreement with the MSW model in the vacuum regime, where it has been measured for the first time, and confirms the MSW validity for the matter enhanced oscillation.
Evidence of the geo-neutrinos has been reached at 5.9 ⊠ confidence level.
Borexino is still taking data to try the nearly prohibitive measurement of the CNO cycle.

Selected session

plenary or astroparticle physics

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