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Precision measurement of the Beryllium-7 line with the Borexino detector

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The Borexino experiment was the first to directly investigate the sub-MeV region of the solar spectrum. Its search for answers

to some fundamental questions in the field of neutrino oscillations was accomplished with a precision measurement of the ${}^7\text{Be}$ line at 5\%; Borexino detected $46.0 \pm 1.5_{\text{stat}}^{+1.6}_{-1.5_{\text{syst}}}$ solar neutrino events/day/(100 tons) during Phase I of data taking. Further investigation of the signal led to the determination of day-night asymmetry that resulted in no significant variation; the detected asymmetry of $0.001 \pm 0.012_{\text{stat}} \pm 0.007_{\text{syst}}$ is consistent with zero within the error. In this talk I will focus on the precision measurement of the ${}^7\text{Be}$ line including the first release of the solar neutrino annual flux modulation in Borexino. Consistent with the expectations results give us the confidence that the signal is in fact coming from the Sun. We also look forward to new results in Phase II that bring remarkably low background levels and new sensitivity.

Auteur principal: M. MANECKI, Szymon (Virginia Tech Ins. and State U.)

Orateur: M. MANECKI, Szymon (Virginia Tech Ins. and State U.)

Classification de Session: Neutrinos

Classification de thématique: Experiment