

Recent results from the solar neutrino experiment Borexino

Dr. Michael Wurm

Institut für Experimentalphysik, Universität Hamburg

For the past 5 years, the Borexino experiment has been taking data at the Gran Sasso National Laboratories (LNGS) in central Italy. For the first time, Borexino has allowed to resolve the low-energetic components of the solar neutrino spectrum, measuring the Be-7 and pep neutrino lines as well as constraining the spectral contribution of the CNO cycle. The combination of these results provided the final confirmation of the LMA-MSW oscillation scenario. In addition, Borexino has provided a very clean measurement of the geoneutrino flux emitted by radioactive elements embedded in the Earth crust and mantle.

Following up the surprising results in the time-of-flight measurement of the CNGS neutrino beam reported by OPERA in 2011, the Borexino collaboration performed a similar measurement based on a special nanosecond-bunched neutrino beam sent from CERN to Gran Sasso in May 2012. The preliminary result reported at the Neutrino 2012 conference showed no significant deviation of the neutrino speed from the vacuum speed of light.