Contribution ID: **71** Type: **Asynchronous Talk**

First detection of solar neutrinos from the CNO fusion cycle with the Borexino detector

Borexino is a liquid-scintillator experiment designed and constructed for real-time detection of low energy solar neutrinos. It is installed at the underground INFN Laboratori Nazionali del Gran Sasso (L'Aquila, Italy) and started taking data in May 2007. Today, after a challenging campaign of hardware improvement aimed at controlling its temperature and reducing the intrinsic radioactive backgrounds, the Borexino detector is characterized by the most extreme and unique radiopurity.
Last fall, the Borexino collaboration published in Nature the first experimental evidence of the CNO (Carbon-Nitrogen-Oxygen) neutrinos produced in the Sun. While being a secondary mechanism of energy production in our star, the CNO cycle is the main nuclear engine in more massive stars: this result is therefore crucial for the precision modelling of solar physics and for astrophysics in general since it confirms the existence of this nuclear fusion process in our Universe.
The details of the detector stabilization as well as the strategy adopted by the Borexino collaboration for successfully isolating the spectral component of the CNO signal from the residual backgrounds will be presented.

Primary author: RE, Alessandra Carlotta (Universita' degli Studi & INFN, Milano (ITALY))

Presenter: RE, Alessandra Carlotta (Universita' degli Studi & INFN, Milano (ITALY))

Session Classification: Neutrino Physics Session 2

Track Classification: Neutrino Physics