



*Physics Department seminar*

DIPARTIMENTO DI FISICA, VIA CELORIA 16, MILANO

**Aula Consiglio VIRTUALE, link dedicato**

<https://fisica-unimi.zoom.us/j/94422620862?pwd=Z2hTTHVYUWJjWW9Cam1QQWdpUIR6Zz09>

**8 Marzo 2021– 14:30**

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**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 Laboratori Nazionali del Gran Sasso (L'Aquila, Italy) and started taking data in May 2007.

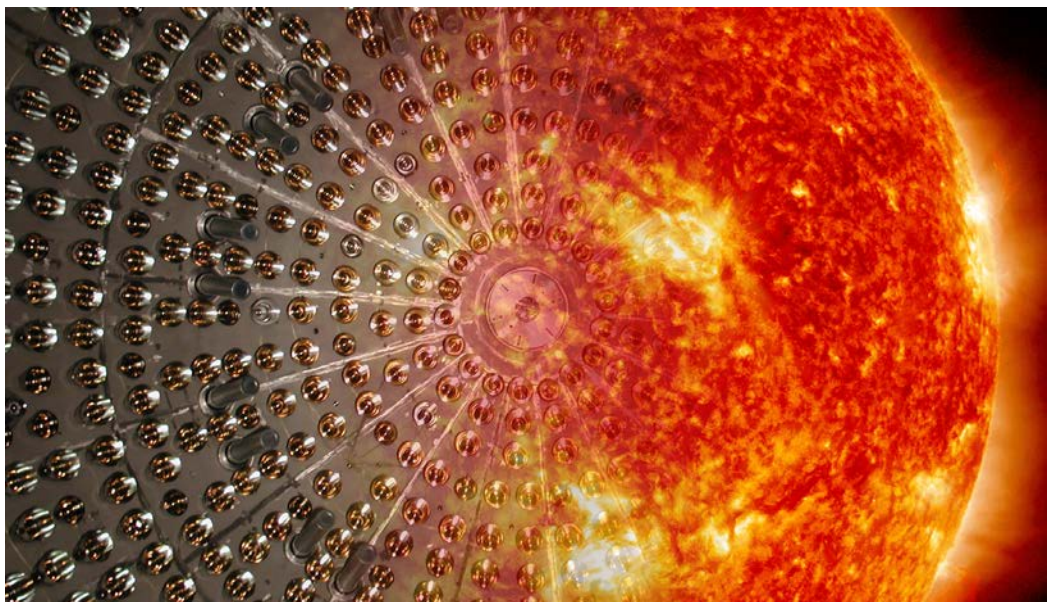
Today, after a challenging campaign of hardware improvement aimed at controlling its temperature and reducing the intrinsic radioactive background, the Borexino detector is characterized by the most extreme and unique radiopurity.

The Borexino collaboration has recently 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 modeling 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 event selection criteria and the strategy adopted by the Borexino collaboration for successfully isolating the spectral component of the CNO signal from the residual backgrounds will be presented.

*\*Nature 587, 577–582(2020)*



Students are cordially invited – Contact [silvia.leoni@mi.infn.it](mailto:silvia.leoni@mi.infn.it)