Perspectives for CNO neutrino detection in Borexino

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Borexino measured with unprecedented accuracy the fluxes of solar neutrinos emitted at all the steps of the pp fusion chain. Still missing is the measurement of the flux of neutrinos produced in the CNO cycle. A positive measurement of the CNO neutrino flux is of fundamental importance for understanding the evolution of stars and addressing the unresolved controversy on the solar abundances. The measurement of the CNO neutrino flux in Borexino is challenging because of the low intensity of this component (CNO cycle accounts for about 1% of the energy emitted by Sun), the lack of prominent spectral features and the presence of background sources. The main background component is ²¹⁰Bi decay in the liquid scintillator of Borexino that creates events with an energy distribution very close to the one of CNO neutrino interactions. The talk will discuss the efforts to constrain the rate of ²¹⁰Bi and the projected sensitivity for the discovery of a CNO signal.

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