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Neutrino-Oxygen interaction measurement at the Supernova neutrino energy regime with Spallation Neutron Source in Oak Ridge National Laboratory

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Neutrino observations from nearby supernova (SN) bursts in underground detectors, such as Super-Kamiokande and future Hyper-Kamiokande, play a key role in understanding the SN explosion mechanism.
However, the neutrino-oxygen interaction in a few tens of MeV, which is the target energy region of SN neutrinos, is not well measured, and the neutrino information cannot be fully obtained from the precious SN burst. Therefore, a detailed understanding of this reaction is essential to maximizing supernova neutrino observations.
A new neutrino cross-section measurement is proposed using the Spallation Neutrino Source (SNS) in Oak Ridge National Laboratory (ORNL).
This poster reports the current results of a prototype test in Kamioka, Japan, and prospects for the ORNL measurement plan.

Collaboration you are representing

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