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Measuring the Fluorescence Time Profile of the JUNO Liquid Scintillator using Gamma Radiation and a Pulsed Neutron Beam

Major science goals of the upcoming Jiangmen Underground Neutrino Observatory (JUNO) in China are the search for the proton decay and the detection of the diffuse supernova neutrino background. Both phenomena will show characteristic signals in the detector. Therefore, we evaluate the pulse shape discrimination performance of the future JUNO liquid scintillator (LS) using excitation by gamma radiation inducing recoil electrons as well as a pulsed neutron beam inducing recoil protons. We developed an experimental setup to characterize the time distribution of the light emission in the fluorescence process of the LS. Results for the fluorescence decay-time profiles of the future JUNO LS, obtained during two beam times at the 14 MV Tandem Van de Graaff Accelerator of the Maier-Leibnitz-Laboratorium (MLL), are presented.

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Mini-abstract

Results for the fluorescence decay-time profiles of the JUNO liquid scintillator are presented.

Experiment/Collaboration

JUNO Collaboration

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