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Kaon Quenching Studies to Improve JUNO's Sensitivity to Proton Decay

Tuesday 29 August 2023 15:15 (15 minutes)

The Jiangmen Underground Neutrino Observatory (JUNO) is a 20 kton liquid scintillator detector currently under construction in Southern China. Beyond its main purpose of determining the neutrino mass ordering, JUNO will contribute to the search for the SUSY-favored proton decay into a kaon and an antineutrino. To reach the estimated sensitivity for $p \rightarrow K^+ + \bar{\nu}$ of 9.6×10^{33} years at 90 % C.L. after 10 years of data taking, event selection relies strongly on the signal structure of the daughter kaon and differentiation from atmospheric neutrino backgrounds.
This poster presents the influence of the kaon's light emission behavior on the proton decay event selection efficiency as well as first test of an experiment characterizing the particle's energy dependent light output.

Submitted on behalf of a Collaboration?

Yes

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