

Measurement of K^+ production in charged-current neutrino interactions in the T2K experiment

Friday, 21 June 2024 17:30 (2 hours)

Kaon production cross sections provide an important constraint on K^+ production by atmospheric neutrinos in current and future proton decay searches. Modern neutrino-nucleus event generators largely depend on theoretical models for the descriptions of backgrounds due to kaons and need to be verified by measurements. We search for K^+ production in charged-current neutrino interactions inside the scintillator-based fine-grained detector of the T2K experiment. The event rate for these processes is low compared to pion production channels because of Cabibbo suppression and the relatively large kaon mass. T2K measures this process at low neutrino energies close to the threshold for strangeness production where existing measurements from bubble chambers have limited statistics. Events with a K^+ are identified in T2K by studying the energy deposition of tracks in the Time Projection Chamber. This poster will show the latest results for the selected kaon sample together with comparisons to different models. It will also discuss the method used to estimate the backgrounds and evaluate a one-bin cross section in the restricted phase-space.

Poster prize

No

Given name

Katarzyna

Surname

Kowalik

First affiliation

National Centre for Nuclear Research

Second affiliation

Institutional email

Katarzyna.Kowalik@ncbj.gov.pl

Gender

Female

Collaboration (if any)

T2K Collaboration

Primary author: KOWALIK, Katarzyna (NCBJ)

Presenter: KOWALIK, Katarzyna (NCBJ)

Session Classification: Poster session and reception 2

Track Classification: Neutrino interactions