



Contribution ID: 13

Type: Poster

A Machine Learning Approach to Study the Neutrino Charged-current Interaction on ^{127}I

An inclusive measurement of the cross section of the neutrino charged-current interactions on ^{127}I will help study the quenching of g_A , the axial-vector coupling constant, which determines the rate of neutrinoless double beta decays. At the Los Alamos Meson Production Facility (LAMPF), an exclusive measurement that do not count all possible final states was made. To make an inclusive measurement, a 185 kg NaI[Tl] prototype was deployed by the COHERENT collaboration. To reduce the major background, cosmic rays, a machine learning model based on a convolutional neural network (CNN) is being developed. The model, tested with simulations, can remove 78% of the backgrounds while preserving 77% of the cc signals.

Mini-abstract

A CNN model preserves 77% of nueCC on ^{127}I signals and removes 78% of the cosmic backgrounds.

Experiment/Collaboration

NaI [Tl], the COHERENT collaboration

Primary author: Mr AN, Peibo (Duke University)

Presenter: Mr AN, Peibo (Duke University)

Session Classification: Poster session 4