HAW14-2014-000052

Abstract for an Invited Paper for the HAW14 Meeting of the American Physical Society

Toward construction of a unified neutrino-nucleus interaction model¹ HIROYUKI KAMANO, RCNP, Osaka University

A precise knowledge of the neutrino-nucleus interactions is becoming one of the crucial issues for a successful determination of the neutrino parameters from the future neutrino-oscillation experiments. It is therefore urgent to have a reliable neutrino-nucleus interaction model that enables a quantitative description of neutrino-nucleus reaction cross sections in an accuracy of 10 percent or less. However, the kinematic regions relevant to the neutrino parameter searches extend over the quasi-elastic, resonance, and deep-inelastic-scattering regions, where different theoretical treatments based on hadronic or partonic degrees of freedom are usually employed, and this makes the construction of a unified neutrino-nucleus interaction model covering those kinematic regions challenging. To tackle on such a challenging issue, we have recently developed a collaboration of experimentalists and theorists in different fields at J-PARC Branch of KEK Theory Center (http://www.nuint.kek.jp/index_e.html). In this talk, I review our efforts toward construction of the unified neutrino-nucleus interaction model at J-PARC Branch of KEK Theory Center.

¹The author thanks J-PARC Branch of KEK Theory Center for supporting the collaboration's activity.