Canadian Association of Physicists

Association canadienne des physiciens et physiciennes

Contribution ID: **3224** Type: **Oral not-in-competition (Graduate Student) / Orale non-compétitive (Étudiant(e) du 2e ou 3e cycle)**

Measuring inelasticity distribution of neutrino interactions between E_ν 100 GeV and 1 TeV with IceCube DeepCore

Wednesday 8 June 2022 12:00 (15 minutes)

There is currently a lack of experimental measurements supporting model predictions of neutrino-nucleon differential cross section in the energy range between ~300 GeV - 1 TeV. Here we seek to expand this knowledge by measuring the inelasticity of these interactions with IceCube DeepCore. DeepCore is a densely packed sub-array inside the IceCube detector, which allows us to detect and reconstruct neutrinos with tens of GeV with greater precision. IceCube has previously measured inelasticity distribution at 1 TeV- 100 TeV and with this analysis we aim to extend this range to lower energies to fill in the gap with accelerator measurements. We use a low-background sample of fully contained muon-neutrino charged current events to fit the shape of flux-averaged inelasticity distribution. In this contribution we will present the methods and the status of the analysis.

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Session Classification: W1-1 Neutrino Experiments (PPD) | Expériences de neutrinos (PPD)

Track Classification: Technical Sessions / Sessions techniques: Particle Physics / Physique des particules (PPD)