



Contribution ID: 220

Type: **Oral Presentation**

## ProtoDUNE-SP Proton Analysis

*Monday, 29 July 2019 15:00 (20 minutes)*

Next generation neutrino oscillation experiments enter a new era of precision measurements employed in the search for CP violation and mass hierarchy. Charged-current (CC) interactions are the primary detection channels for neutrino oscillation experiments. Protons are one of the final state particles in neutrino CC interactions such as CC quasi-elastic (CCQE) and CC resonance (CCRES) interactions, and hence they play an essential role in reconstructing the neutrino total energy in the interactions.

Liquid argon time projection chambers (LArTPC) provide excellent tracking and calorimetric capabilities, enabling us to study neutrino-nucleus interactions in unprecedented detail. The ProtoDUNE-SP experiment utilizes the CERN H4 beam line with known particle type (hadrons and electrons) and incident energy. This provides a controlled environment for better understanding of the interactions taking place within a LArTPC detector. In this talk, I will present the analysis result using the ProtoDUNE-SP proton beam data.

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**Session Classification:** Neutrino Physics

**Track Classification:** Neutrino Physics