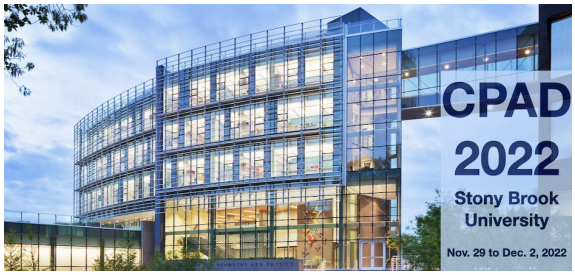

Contribution ID: **89** Type: **Contribution Talk**

Measurement of electron in-liquid amplification in pure argon

Thursday, 1 December 2022 08:30 (20 minutes)

As a leading detector technology at the intensity frontier, liquid noble element detectors simultaneously measure the emission of ionization charge (electrons) and prompt scintillation light produced by ionizing particles passing through the noble element. Since the signals are relatively small, lots of efforts are being made to amplify the charge signals by electronic amplifiers after the electron charges are collected in the single-phase detector, which requires stringent electronics noise control, or to multiply electrons before their collection in the dual-phase detector, which introduces technical challenges in detector design and operation. To amplify the charge signals before electrons are collected in liquid phase will lower the energy threshold and improve the signal-to-noise ratio of the liquid noble element detectors, while simplifying the design, and operation of a detector. This technology has been demonstrated feasible in pure liquid xenon by several groups and in this talk, the preliminary results from the measurement of electron in-liquid amplification in pure argon will be presented, together with a future plan to optimize the measurement.

Primary author: MU, Wei (Fermilab)

Presenter: MU, Wei (Fermilab)

Session Classification: WG3: Noble Element Detectors

Track Classification: WG3: Noble Element Detectors