Contribution ID: **327** Type: **Oral**

Scintillating Bubble Chamber for Dark Matter and CEvNS Detection

Monday, 7 August 2017 17:15 (15 minutes)

Scintillating bubble chambers are demonstrated to have clean separation between electron recoils and nuclear recoils down to a thermodynamic "Seitz"threshold of 2 keV with a prototype liquid xenon chamber developed at Northwestern University, as the former only produce scintillation light while the later produce both scintillation light and bubble nucleation. This clean separation is expected to extend down to the thermal stability limit of the target fluid, enabling the realization of WIMP or CEvNS detectors with sub-keV threshold. The demonstrated behavior for liquid xenon is expected to hold for other noble liquids such as argon, which expands the physics reach of the new technology. The prototype chamber is instrumented with a CCD camera for near-IR bubble imaging, a solar-blind PMT to detect 175-nm xenon scintillation light, and piezoelectric acoustic transducers to detect the ultrasonic emission from a growing bubble.

Primary authors: ZHANG, Jianjie (Northwestern University); DAHL, C Eric (Northwestern University)

Presenter: ZHANG, Jianjie (Northwestern University)

Session Classification: Dark matter

Track Classification: Dark matter (direct detection, indirect detection, theory, etc.)