Canadian Association of Physicists
Association canadienne des physiciens et physiciennes

Contribution ID: **88** Type: **Oral Competition (Graduate Student) / Compétition orale (Étudiant(e) du 2e ou 3e cycle)**

Thermal Simulations for the Scintillating Bubble Chamber Dark Matter Experiment

Monday 9 June 2025 15:00 (15 minutes)

The Scintillating Bubble Chamber (SBC) collaboration combines historic bubble chamber technologies with the scintillation properties of liquid nobles to create a detector uniquely suited to low threshold rare event searches. The collaboration has built two nearly identical assemblies, SBC-LAr10 is meant for calibration studies and future coherent elastic neutrino-nucleus scattering research at Fermilab, and SBC-SNOLAB is bound for a low background dark matter search. SBC uses a superheated xenon-doped liquid argon active volume, allowing for event by event energy reconstruction, electron-recoil insensitivity, and a projected 100 eV threshold. The cryogenic nature of the detector presents an interesting opportunity to look further into the low temperature properties of both the active volume and CF_4 hydraulic fluid at the 30 PSI operating pressures of the detector. This talk will outline the current status of both SBC-LAr10 and SBC-SNOLAB, as well as briefly discussing the potential for estimating cryogenic properties of the detector constituents.

Keyword-1

dark matter

Keyword-2

simulation

Keyword-3

cryogenic

Author: WYMAN, Ezri (Queen's University)

Presenter: WYMAN, Ezri (Queen's University)

Session Classification: (PPD) M2-9 Searches for dark matter I | Recherche de la matière noire I (PPD)

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