Contribution ID: **481** Type: **Talk**

The Scintillation Bubble Chamber (SBC) experiment for dark matter and reactor CEvNS

Wednesday 8 September 2021 16:25 (15 minutes)

The Scintillating Bubble Chamber (SBC) experiment is a novel detection technique aimed at detecting low-mass (0.7-7 GeV/c2) WIMP interactions and coherent elastic neutrino-nucleus scattering (CEvNS) from reactor neutrinos. Using a target volume primarily composed of superheated argon, the nucleation signal from electron recoils (the limiting factor for low-threshold studies in bubble chambers) is suppressed, allowing for the exploration of new parameter space. Particle interactions with the target fluid can lead to the production of heat (bubbles) and scintillation light. By combining these observables, the SBC detector is aiming to reach a threshold for nuclear recoils of 100 eV and a projected WIMP-sensitivity of 1.73x10-43 cm2, for a WIMP mass of 1 GeV/c2.
In this talk, I will present the design of the SBC experiment and provide an update on the ongoing construction and commissioning at Fermilab. I will also discuss the new camera test setup designed and being constructed at the University of Alberta. Finally, I will give an overview of the collaboration's plans for future operations at Fermilab and SNOLAB, including the potential for such a detector to become the leading technology to study CEνNS.

Author: Dr PAL, Sumanta (University of Alberta)

Presenter: Dr PAL, Sumanta (University of Alberta)

Session Classification: Nuclear and particle astrophysics

Track Classification: Nuclear and particle astrophysics