Canadian Association of Physicists
Association canadienne des physiciens et physiciennes

Contribution ID: **3779** Type: **Invited Speaker / Conférencier(ère) invité(e)**

(I) New searches in astroparticle physics with noble liquids enabled by developments in SiPM technology

Tuesday 20 June 2023 13:45 (30 minutes)

Silicon photomultiplier (SiPM) technology displaced photomultiplier tubes in the design of next-generation experiments in particle physics. This presentation will focus on astroparticle physics experiments that will use liquid argon or liquid xenon with SiPM photo-detectors for rare-event searches such as dark matter, neutrinoless double beta decay, solar neutrinos, supernova neutrinos, and coherent elastic neutrino-nucleus scattering. The photo-detector requirements for these experiments will be discussed, including ultraviolet photon detection efficiency (either direct sensitivity or with a wavelength-shifter), low radioactivity, and low noise rates to enable low thresholds. This talk will also feature the latest developments in photon-to-digital converter (PDC) technology, where signals from each photodiode are digitized in situ, and its proposed applications in future experiments.

Keyword-1

Silicon Photomultipliers

Keyword-2

Noble Liquid Experiments

Keyword-3

Astroparticle Physics

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Session Classification: (PPD) T3-3 Discovering New Paths to Discovery: New Technologies and Methods to Uncover BSM Physics Symposium | Symposium sur les nouvelles technologies et méthodes pour découvrir la physique au delà du modèle standard (PPD)

Track Classification: Symposia Day (Tues. June 20) / Journée de symposiums (mardi, le 20 juin): Symposia Day (PPD - PPD) - Discovering New Paths to Discovery: New Technologies and Methods to Uncover BSM Physics | Découvrir de nouvelles voies vers la découverte : Nouvelles technologies et méthodes pour découvrir la physique au-delà du modèle standard