Contribution ID: **57** Type: **Oral/Presentation**

LightPix: Scalable readout for silicon photomultipliers in cryogenic environments

Wednesday 20 November 2024 16:12 (18 minutes)

LightPix is designed for amplification, triggering, digitization, and multiplexed readout of high-channel count silicon photomultiplier (SiPM) systems, particularly within cryogenic environments. It is based around the LightPix application-specific integrated circuit (ASIC), a custom low-power cryo-compatible ASIC which provides 64 input amplifiers, self-triggering TDCs with O(ns) precision, and digital multiplexed readout. The LightPix system leverages the scalable readout techniques and digital back-end components from the related LArPix effort, which has been demonstrated in multiple liquid argon detectors with $>10^5$ channels. LightPix also features programmable multi-channel hit-coincidence logic to mitigate high dark count rates, enabling applications beyond cryogenic detectors. Prototype detectors using the current LightPix ASIC will be presented, and progress on the design of the next-generation LightPix ASIC will be discussed.

Do you need a VISA letter for traveling to Canada ?

No

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Session Classification: Cryogenic and Noble Liquids Detectors (2) (Chair: Shingo Kazama, Alex Li)

Track Classification: Detectors: Cryogenic and Noble Liquids Detectors