

Physics & Astrophysics Colloquium

Searching for Dark Sectors at the Intensity Frontier with the Belle II Experiment

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4:00 PM Friday, November 18, 2022, Room 211, Witmer Hall

Abstract:

The Belle II experiment, located at the SuperKEKB asymmetric electron-positron collider in Japan, is a state-of-the-art upgrade to the previous generation Belle experiment. SuperKEKB is currently operating at the world's highest collision intensity as Belle II approaches a collision dataset that will be 50 times larger than the original Belle dataset. Enhanced by unique dark sector triggers, the accumulating Belle II dataset is rich with immediate and near-term opportunities for exciting dark sector physics through direct searches and precision measurements. Results will be presented from a recent Belle II search for Axion-Like Particles, which are theorized to potentially allow for interactions between the known particles and the dark sector. Detector-development research exploring new directions for improving the Belle II detector's sensitivity to dark sectors through the use of pulse shape discrimination in fast pure CsI scintillators will also be shown. The results demonstrate pulse shape discrimination in pure CsI has exciting capabilities for improving neutral particle identification at future particle physics experiments.

Refreshments at 3:30 PM in Witmer Hall, Room 215

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