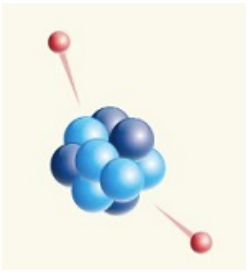

Contribution ID : **58** Type : **not specified**

X/Y multi-site reconstruction in dual-phase xenon detectors

Wednesday, 12 November 2025 17:26 (14)

In liquid xenon detectors searching for neutrinoless double beta decay (0vbb), single-site/multi-site (SS/MS) discrimination is critical for reducing backgrounds from 214Bi gamma rays. Dual-phase detectors, which utilize electroluminescence to measure the ionization signals, have demonstrated excellent multi-site identification in the longitudinal (z) direction but have not demonstrated SS/MS discrimination in the transverse (x/y) plane. If multi-site interactions could be identified down to separations of a few mm, 214Bi backgrounds could be reduced by a factor of two, potentially increasing the sensitivity of dual-phase detectors to 0vbb by up to ~50%. I will discuss the capability and limitations of x/y SS/MS discrimination in dual-phase detectors with the traditional electroluminescence readout, and introduce the possibility of adding additional wire grids to such detectors to improve spatial reconstruction via induction sensing.

Primary author(s) : Dr LENARDO, Brian (SLAC)

Presenter(s) : Dr LENARDO, Brian (SLAC)

Session Classification : Blue Sky Session