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# Electroluminescence in Liquid Xenon and Its Applications

*Tuesday, 19 May 2026 12:00 (30 minutes)*

Electroluminescence (EL) in liquid xenon is receiving renewed attention as a low-noise, proportional signal amplification mechanism for noble-liquid detectors. Compared to traditional gas-phase EL, liquid-phase EL enables more flexible detector geometries, efficient charge extraction, and alternative optical readout schemes for single-phase noble-liquid time projection chambers.

In this talk, I will present recent R&D results on electroluminescence in liquid xenon, including measurements of EL onset, light yield, electron- and nuclear-recoil response, and field dependence under well-controlled electric-field configurations. I will discuss observed variations in EL performance and their implications for detector stability, background control, and scalability.

I will also describe how liquid-xenon EL can be exploited for enhanced charge readout in rare-event detectors, with particular emphasis on low-energy sensitivity and high-resolution signal reconstruction. Ongoing R&D efforts and open questions will be outlined, including optimization of EL yield, control of photon feedback, and integration with large-area photosensors. These results highlight the potential of liquid-phase electroluminescence as a practical and scalable technique for next-generation xenon-based detectors in both particle physics and applications.

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