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Towards xenon-doped liquid argon for LEGEND

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The LEGEND collaboration is searching for neutrinoless double beta decay of Ge-76. To this end, high-purity Ge detectors are operated in an instrumented liquid argon volume, shielding them from external background radiation passively and actively via the emission of scintillation light upon interaction with ionizing radiation. While liquid argon scintillation detectors are an established and well-performing technology, they suffer from short emission wavelengths, long scintillation times, and only moderate attenuation lengths. Adding small amounts of xenon can enormously improve the scintillation properties.
Xenon-doped liquid argon features a higher photo-electron yield, a faster scintillation time profile, and a longer attenuation length than pure liquid argon. In this talk, I will present the current knowledge on xenon-doped liquid argon scintillation, its advantages and disadvantages, and its potential future impact on LEGEND.

Primary author: VOGL, Christoph (TU-Munich)

Presenter: VOGL, Christoph (TU-Munich)

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