

WLS R&D for the Detection of Noble Gas Scintillation at LBL: seeing the light from neutrinos, to dark matter, to double beta decay

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Radiation detectors with noble gasses as the active medium are becoming increasingly common in experimental programs searching for physics beyond the standard model. Nearly all of these experiments rely to some degree on collecting scintillation light from noble gasses. The VUV wavelengths associated with noble gas scintillation mean that most of these experiments use a fluorescent material to shift the direct scintillation light into the visible or near UV band. We present an overview of the R&D program at LBL related to noble gas detectors for neutrino physics, and dark matter. This program ranges from precise measurements of the fluorescence behavior of wavelength shifting films, to the prototyping of large area VUV sensitive light guides for multi-kiloton detectors. We will provide some background information as well as recent progress on each branch of this program, as well as plans for future work and connections to existing or planned experimental programs.

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