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Understanding infrared scintillation light in xenon

Thanks to its excellent properties, xenon is widely used as a target material in dark matter and rare-event search experiments. Ultraviolet scintillation has long been recognized as the primary signal channel in xenon-based detectors and its properties have been well studied. However, xenon also scintillates infrared light, a component which has received very little attention so far. Taking advantage of this additional signal could enhance the performance of future xenon detectors.

This contribution reports recent progress on the characterization of infrared scintillation in both gaseous and liquid xenon, with particular emphasis on its pulse-shape behavior. Furthermore, new wavelength-resolved measurements of the infrared emission are presented, providing enhanced insight into its spectral structure and the mechanisms underlying its production.

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