XeSAT2022 - International Workshop on Applications of Noble Gas Xenon to Science and Technology

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GPU-based optical simulation of the DARWIN detector

Understanding propagation and detection of scintillation light is critical for maximizing the discovery potential of next-generation liquid xenon detectors that use dual-phase time projection chamber technology. This talk describes a detailed optical simulation of the DARWIN detector implemented using Chroma, a GPU-based photon tracking framework. Advantages of the framework are discussed, followed by the description of several studies investigating variations on the baseline detector design aimed at maximizing efficiency and minimizing the time of light collection. Results of the studies are presented.

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