

Abstract Submitted
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Optical simulation for DARWIN on GPUs with Chroma LUKE

JONES, University of Alabama, DARWIN COLLABORATION — DARWIN is an ultimate dark matter detector that will utilize 50 tons of liquid xenon to search for dark matter. Due to its technological advantages, it will also be able to perform sensitive searches for other processes and particles, such as neutrinoless double-beta decay and axions. Optimizing the detector design and maximizing light collection in such a large, complex detector requires extensive optical simulations. This talk will describe the DARWIN optical simulation based on Chroma framework that was developed at the University of Alabama. Chroma uses GPUs for ultra-fast photon tracking and allows one to quickly investigate different design variants by directly using CAD files to describe detector geometry. Several studies that were conducted with the framework will be described. Comparison with the conventional, Geant4-based, simulation will also be presented.

Luke Jones
University of Alabama

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