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Fast Photon Monte Carlo for Water Cherenkov Detectors ANTHONY LATORRE, None, STANLEY SEIBERT, University of Pennsylvania, LBNE COLLABORATION — We present *Chroma*, a high performance optical photon simulation for large particle physics detectors, such as the water Cerenkov far detector option for LBNE. This software takes advantage of the CUDA parallel computing platform to propagate photons using modern graphics processing units. In a computer model of a 200 kiloton water Cerenkov detector with 29,000 photomultiplier tubes, Chroma can propagate 2.5 million photons per second, around 200 times faster than the same simulation with Geant4. Chroma uses a surface based approach to modeling geometry which offers many benefits over a solid based modelling approach which is used in other simulations like Geant4.

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None

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