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Telegrapher equation for photon diffusion in LArTPCs with photon removal at the boundaries

LArTPCs are important detectors in several experiments and light propagation predictions inside the LArTPC play an important role in their capabilities. This work explores an analytical approach to predict light propagation. We present an analytical solution to a relativistic photon diffusion equation in terms of the physical parameters relevant to the DUNE detectors' physics and account for photon absorption at the boundaries through physical considerations, instead of solving it as a boundary value problem. We then compare our results to Geant4 simulations and find similar outcomes.

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