Abstract Submitted
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A study on the reflectivity of Tyvek ALVARO CHAVARRIA, Duke University — Tyvek is a permeable, strong, white material made by Dupont. Due to its high reflectivity, many physics experiments use Tyvek to increase the collection of light. The Super-Kamiokande neutrino experiment in Japan uses this material extensively in its outer detector and its reflective properties are part of the Super-K Geant3 Monte Carlo simulation. Currently, the reflective properties of Tyvek that are in the Super-K simulation are not precisely known. Thus, a good way to improve the outer detector (OD) simulation might be to implement a more realistic model for the reflection of photons on the Tyvek surface. An experiment was developed to measure the reflectivity (percentage of light reflected at a particular angle for a particular angle of incidence of the incoming photons) of Tyvek under water, for all angles of incidence and all angles of reflection. Preliminary results have been obtained and will be presented at the conference. Once all results are in, it will be attempted to fit the reflectivity function to Lambert's cosine law or some variation of it. After a successful experimental fit is found, the model will be implemented into Super-K's Monte Carlo simulation.

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