Abstract Submitted
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The Optical Characterization of Aerogel Tiles for Cherenkov Detectors at Jefferson Lab[1] ALEXANDER DITTMANN, University of Illinois Urbana-Champaign — The purpose of this project is to determine the scattering and absorption lengths of aerogel tiles of refractive indices ranging from 1.03 to 1.01 produced by Matsushita Electric Works and Japanese Fine Ceramics Center which are used in the Cherenkov detectors at Jefferson Lab. Cerenkov detectors use Cherenkov radiation to detect and identify particles traveling though them. Since light traveling through aerogel is integral to their use as Cherenkov counters, knowledge of aerogel's optical properties is essential. The optical properties measured were the likelihood of a photon being absorbed or scattered as it passed through aerogel. Both properties were tested by shining a collimated beam of light 470nm LED light through different thicknesses of aerogel: up to 20 tiles each about 1 cm thick. The change in intensity was measured with a 5-inch photomultiplier tube. Scattering has a great effect over large distances and absorption has a very small effect over shorter distances. Scattering was measured first, at aerogel thicknesses of 1-5 cm, absorption measured at distances of 10-20 cm, taking into account the previously calculated scattering. This presentation will consist of the results on the scattering and absorption length of aerogel for use in Jlab's Cherenkov detectors.

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