

# Application of WLS fibers for xenon scintillation readout

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Wave-Length Shifting (WLS) fibers are optical fibers specially designed to shift the wavelength of incident ultraviolet or blue light to longer wavelengths, namely green light. The usage of WLS fibers for xenon scintillation readout offers several advantages, including enhanced light yield due to efficient conversion of UV/blue scintillation photons to visible light, reduced sensitivity to electromagnetic interference and improved spatial resolution, rendering them valuable for precise detection in xenon-based particle physics experiments. Xenon is extremely important in experiments regarding rare event detection, specifically in experiments for neutrinoless double beta decay and direct dark matter searches. To conduct research on the readout of WLS fibers, simulation studies will be performed to assess some characteristics of the fibers, namely their overall losses. For that purpose, an optical, light-tight box has been assembled to house a system consisting of WLS fibers and optical detection instrumentation for experimental validation of the simulated results.