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(G*) Fluorescence measurements of Clevios for use in particle detectors

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Liquid scintillators are a commonly used detection medium for particle and rare-event search detectors. The vessels containing the liquid scintillator are often made of transparent acrylic. In the case of a UV-emitting scintillator, to make the scintillation light observable, the acrylic can be coated with a wavelength shifter like 1,1,4,4-tetraphenyl-1,3-butadiene (TPB). Another coating of particular interest is Clevios, a conductive material that, when in thin films, is optically transparent. The high conductive properties of Clevios makes it a useful material for use in Time Projection Chambers (TPC) as transparent electrodes. Additionally, the optical transparency of the material allows scintillation light to pass through, meaning Clevios is a good candidate for dual-phase detectors.

Materials used in the construction of the detector can emit fluorescent or scintillation light that can produce higher background signals, and modify the pulse shape of events. The fluorescent properties of Clevios have been studied as function of temperature and compared to the known fluorescence of acrylic and TPB. I will present the experimental methodology and the results of this study.

Keyword-1

Fluorescence

Keyword-2

Clevios

Keyword-3

Astroparticle Physics

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