

PMT optical model

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PMTs are widely used in different areas of physics, especially in neutrino experiments that use great amount of PMTs, both large and small, in order to determine the neutrino hierarchy and oscillation parameters through achieving excellent energy resolution. PMTs do collect the photo-signal from the detector and convert it into the electric signal. The quality of such conversion depends on so-called PDE (photo-detection efficiency) that is connected with quantum efficiency (the property of the photocathode layer inside each PMT). The main goal of this report is to describe optical processes (principally light absorption) inside the photocathode theoretically but not only by fitting experimental results as was done before. Also the research how the light absorption works and how the electromagnetic field changes along the photocathode layer width was done.

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