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A Study of Optical Calibration for the DEAP-3600 Dark Matter Search

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DEAP-3600 is a direct dark matter search experiment at SNOLAB. The optical system for DEAP-3600 consists of 255 high quantum efficiency photomultiplier tubes (PMTs), which detect and monitor the scintillation light produced by particle interactions in the liquid argon target of the detector. The PMT response is calibrated with two kinds of optical calibration sources: an LED-fed fiber array located at the positions of 20 PMTs, and a central laser source. This talk will discuss the optical calibration of the PMTs, present a method to determine relative PMT efficiency values in-situ using the optical calibration sources, and discuss PMT calibration results from commissioning data.

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