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A Model for the Global Quantum Efficiency for a TPB-based Wavelength-Shifting System used with Photomultiplier Tubes in Liquid Argon in MicroBooNE THOMAS WESTER, Massachusetts Inst of Tech-MIT — The MicroBooNE detector uses scintillation light from particle interactions in liquid argon as a data acquisition trigger. This scintillation light has wavelengths in the vacuum ultra violet (VUV) range, and must be converted into visible light to be detected by photomultiplier tubes (PMTs). To convert the light, MicroBooNE uses wavelength shifting plates coated with Tetraphenyl butadiene (TPB) placed in front of its PMTs. While basic tuning of this plate-PMT system is sufficient for triggering, precise calibration of the system makes additional calorimetry possible. This talk will outline how a photon simulation which accounts for the geometry and optical details of the MicroBooNE detector can accompany a measurement of observed photoelectrons in a plate-PMT test stand, and how the results may be used to determine a "global quantum efficiency" for the plate-PMT system. This global quantum efficiency is one required ingredient for improving the capabilities of the light collection system.

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