

E02-013 Analysis Update

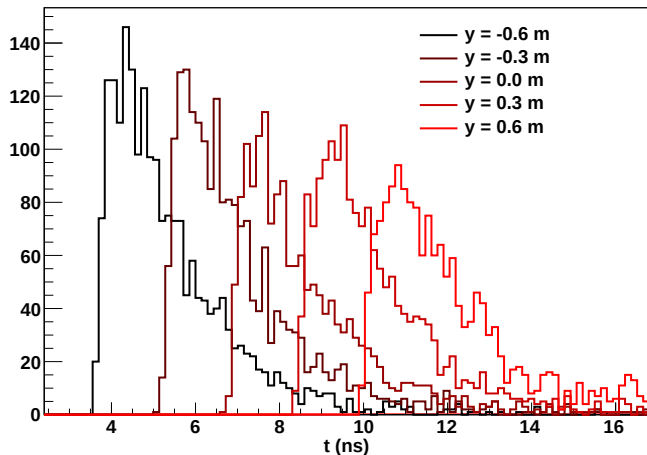
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- ▶ Working on neutron arm scintillator response in GEANT framework
- ▶ Bar geometry includes scintillator bar, lightguides, PMTs
- ▶ Electron is run through at fixed y , photons propagated to PMT
- ▶ Propagation is parameterized by:
 - ▶ Index of refraction
 - ▶ Absorbtion length
 - ▶ Reflection coefficient
- ▶ Photons reaching cathode have time recorded

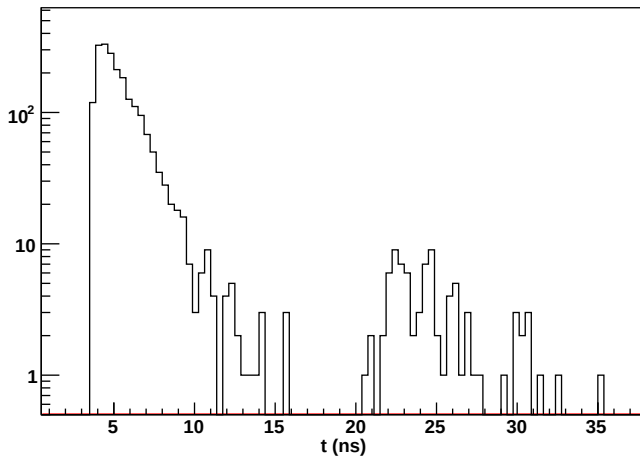
Time Spectrum over electron y

PMT Photon Time Spectrum



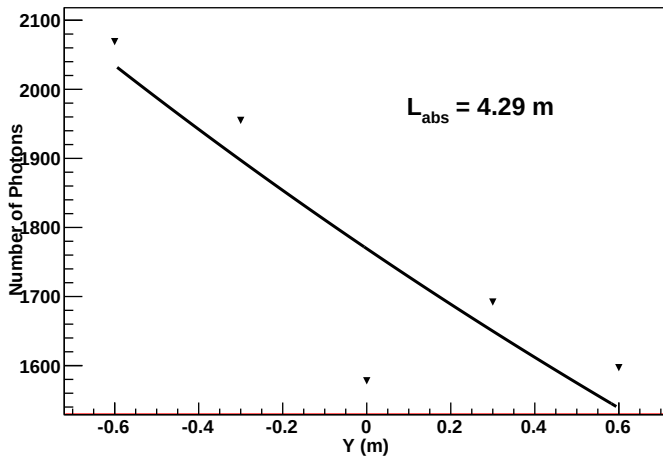
Time Spectrum over long times

Time Spectrum - Log Scale



Amplitude vs Y

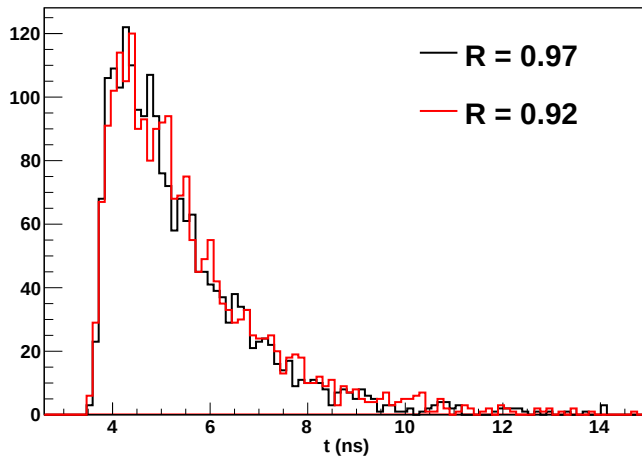
Integrated Number of Photons vs. Y



Reflection Coefficient - Near y

$$y = -0.6 \text{ m}$$

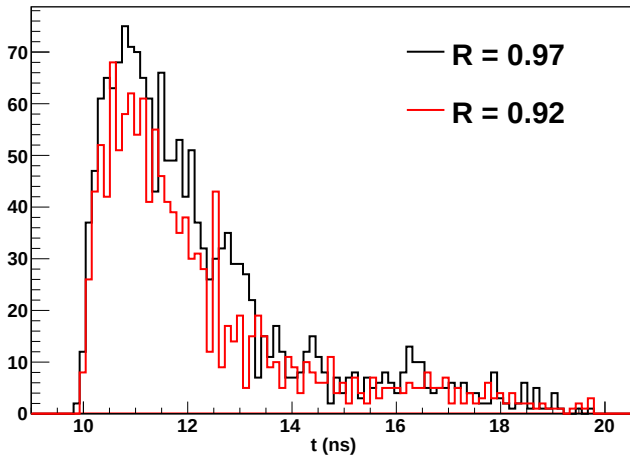
Reflection Coefficient Comparison



Reflection Coefficient - Far y

$$y = 0.3 \text{ m}$$

Reflection Coefficient Comparison



To do:

- ▶ Map out for all bar types over all parameters
- ▶ Devise interpolation scheme for full neutron arm simulation
- ▶ Convolute with PMT response and allow threshold comparison
- ▶ Reproduce neutron arm sums for triggering