

Lumi Detector Modifications

Brian Hahn

The College of William and Mary

December 7th 2007

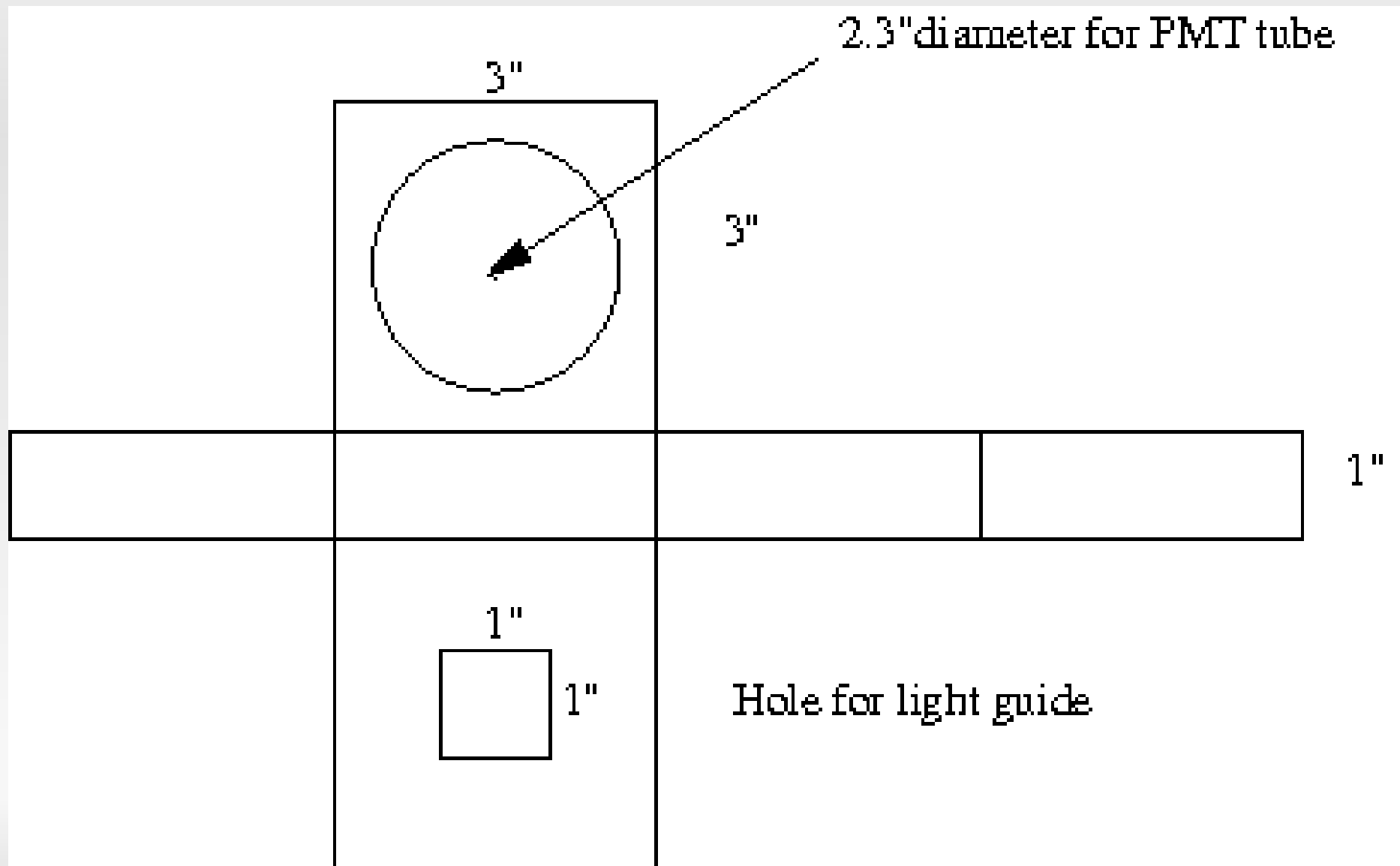
Problems

- PMT High Voltage set so that the signal was $\frac{3}{4}$ the range of the 16 bit ADC ($\sim 300V$)
- PMTs highly non-linear in this high voltage regime
 - => too much light from Quartz
- Need to somehow insert a Neutral Density Filter
- Don't really know what ND Filter is needed

Goals for Modifications

- Create a box to go between light guide and PMT
- Be able to accomadate changes in Neutral Density Filters
- Try to do get rid of the structural electric tape
- EVERYTHING must be radiation hard
- Had to create new light guides

The Design



The Inside



A schematic diagram showing the internal components of a detector. It consists of several stacked rectangular layers. From top to bottom: a blue layer labeled 'PMT Tube', a white layer labeled 'Holds PMT Tube', a blue layer, a white layer labeled 'Holder for ND Filter', another white layer, and a large white rectangular block at the bottom labeled 'Light Guide'. The top two layers are narrower than the middle three layers, which are wider than the bottom block.

PMT Tube

Holds PMT Tube

Holder for ND Filter

Light Guide

The timeline

- Should have one full assembly before Christmas.
- Will be installed during the Christmas down.
- The rest before the PREx test time.