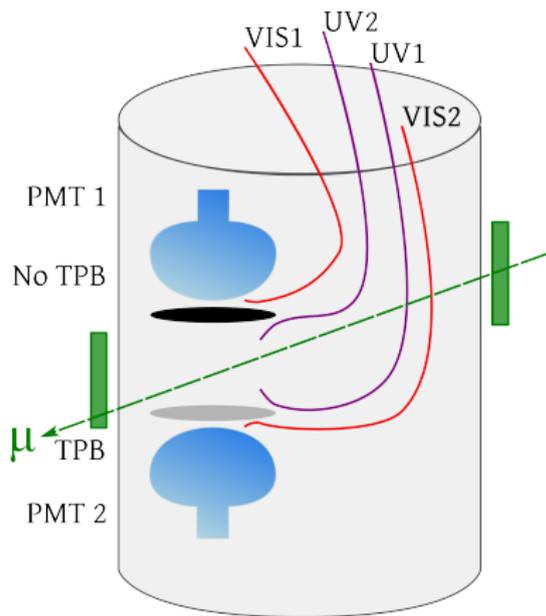


MicroBooNE Vertical Slice Test: UV visibility study and cosmic ray trigger

Christie Chiu

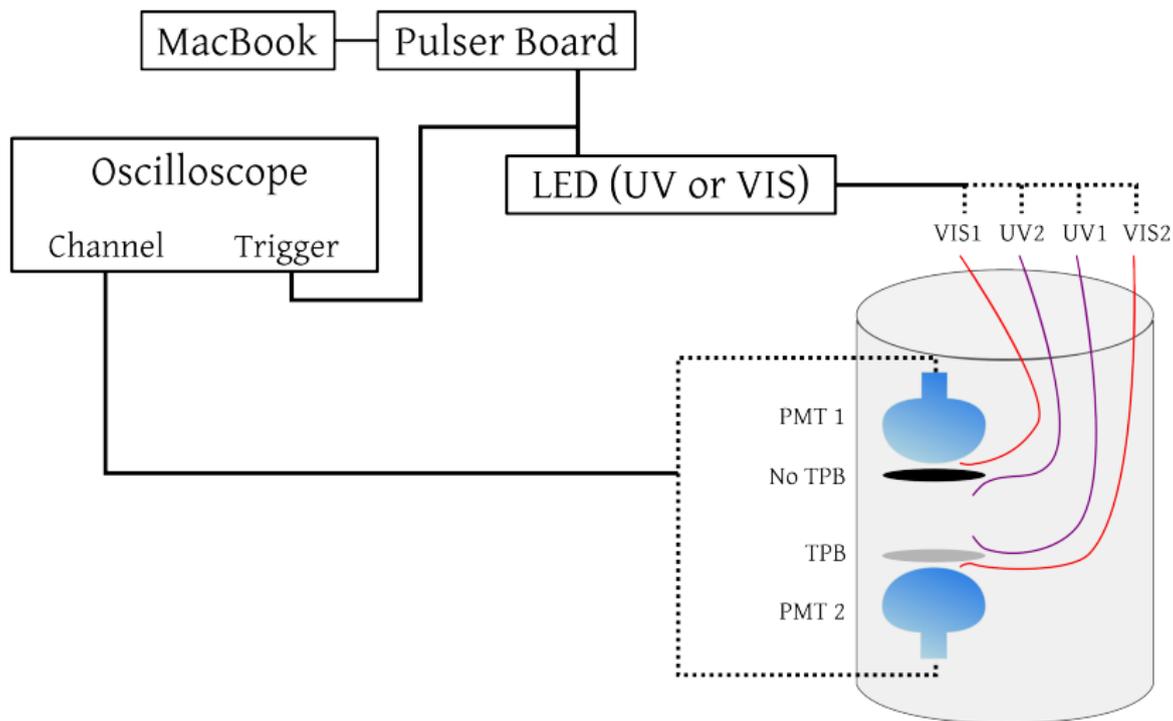
July 12, 2012

Vertical Slice Test Apparatus

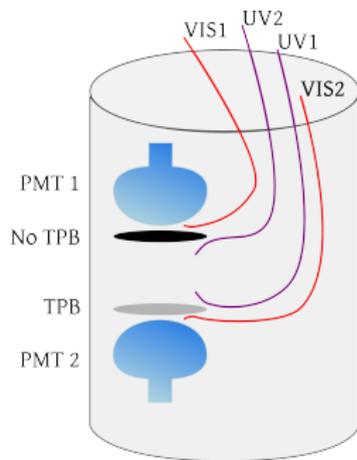
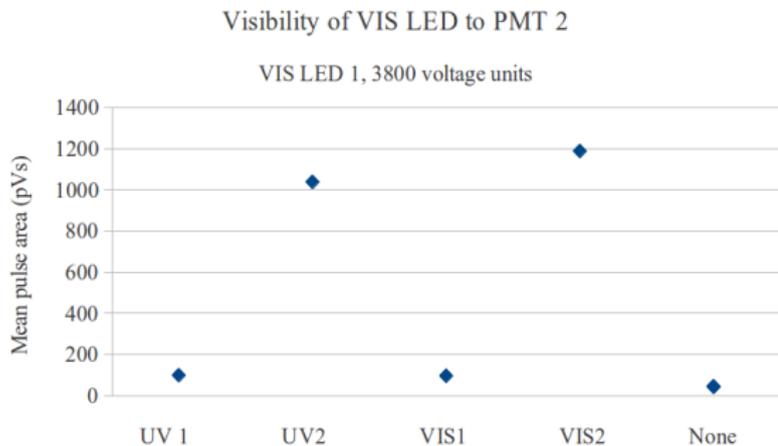


- Testing light collection system for MicroBooNE
- Different light sources allow us to test different stages
- Today's update:
 - Visibility of UV LEDs
 - Installation of cosmic ray trigger

Examining LED visibility

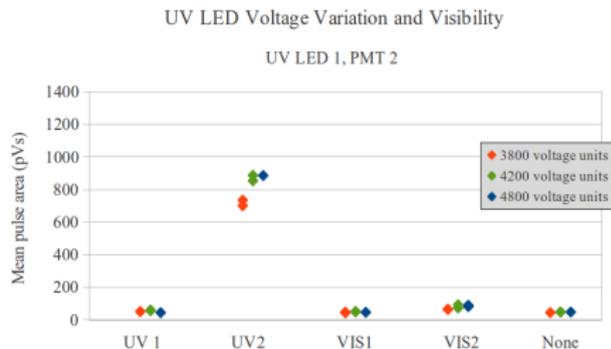
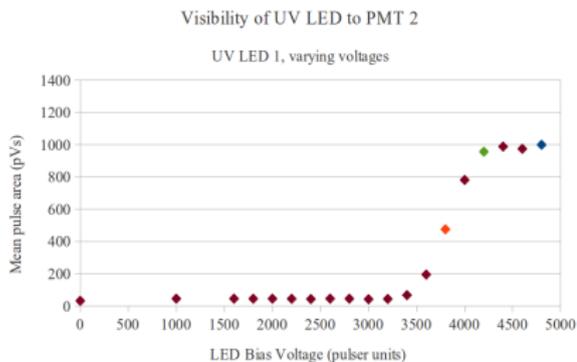


Revisiting visible light visibility (PMT 2)



- PMT 2 sees visible light only when it is directed towards the PMT.
→ Light shielding may not be completely necessary.

UV Visibility, varying LED voltage (PMT 2)

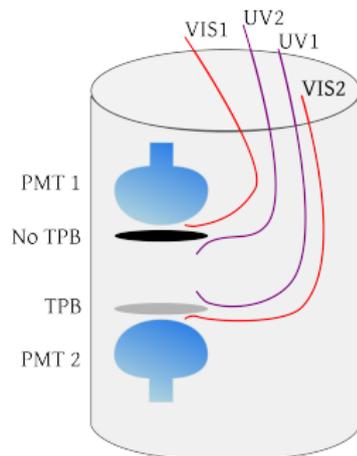
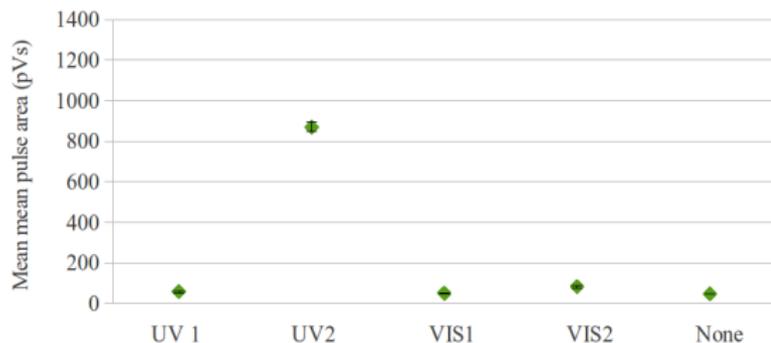


- UV light into fiber UV2: signal increases with LED voltage.
- UV light into fiber VIS2: small increase, however PMT 2 still cannot see much UV.

Systematics from reconnecting LEDs (PMT 2)

Average visibility of UV Light by PMT 2

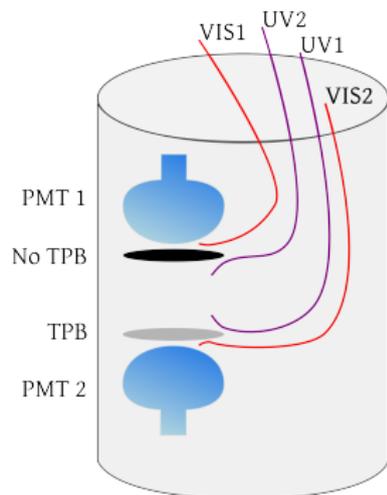
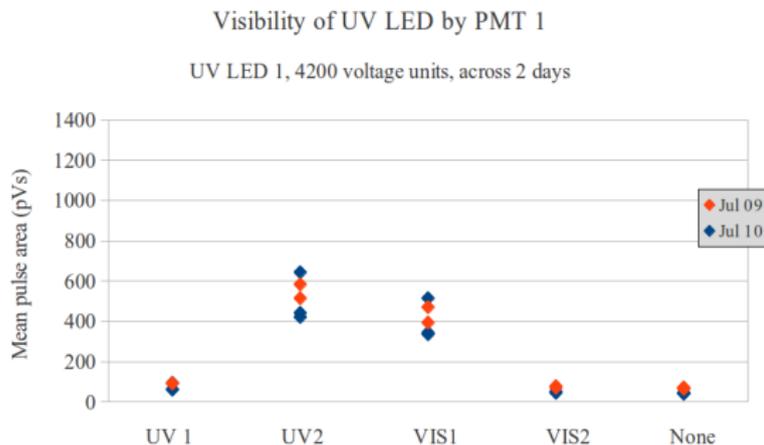
UV LED 1, 4200 voltage units



- Small error bars indicate high consistency between disconnecting and reconnecting light source.

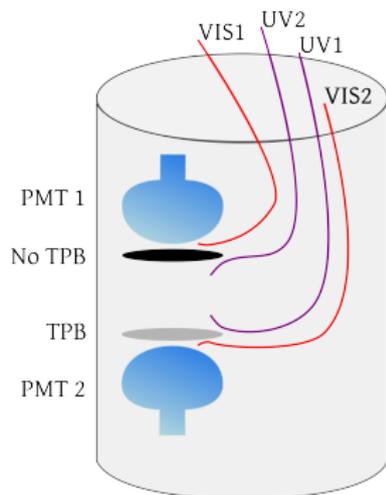
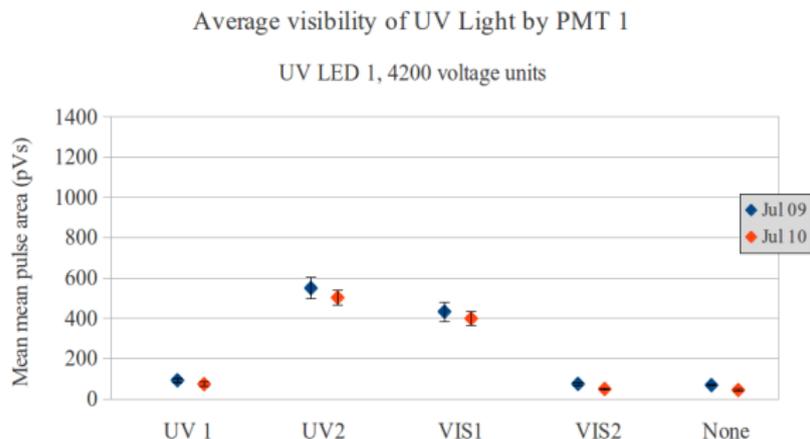
Systematics from reconnecting LEDs (PMT 1)

- Similar consistency for PMT 1, including day-to-day.
- However, PMT 1 sees UV light from the UV2 and VIS1 fibers.
 - Visibility of UV light to PMTs likely sensitive to location/angle of fiber end.



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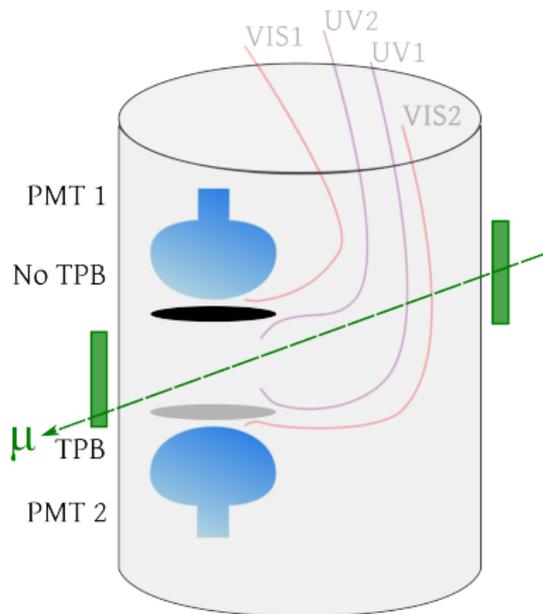
Next study

- Connect one LED to its corresponding fiber, and measure PMT response hourly
→ Demonstrate level of consistency if optical connection is untouched

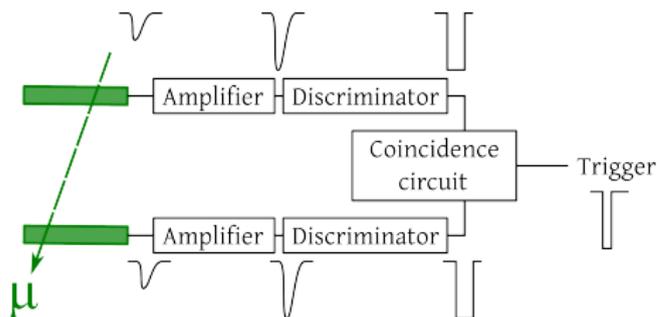
Installation of Cosmic Ray Trigger

Paddle dimensions:

6" x 8" and 4" x 6"



Cosmic Ray Trigger



- We have seen muon events using our trigger around Bo and PMT 2!
- Approximate rate of 1 every 3 minutes
- Georgia is installing MicroBooNE electronics; look forward to that next meeting!

