Light Gas Cherenkov Update

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SoLiD Collaboration Meeting, May 2016

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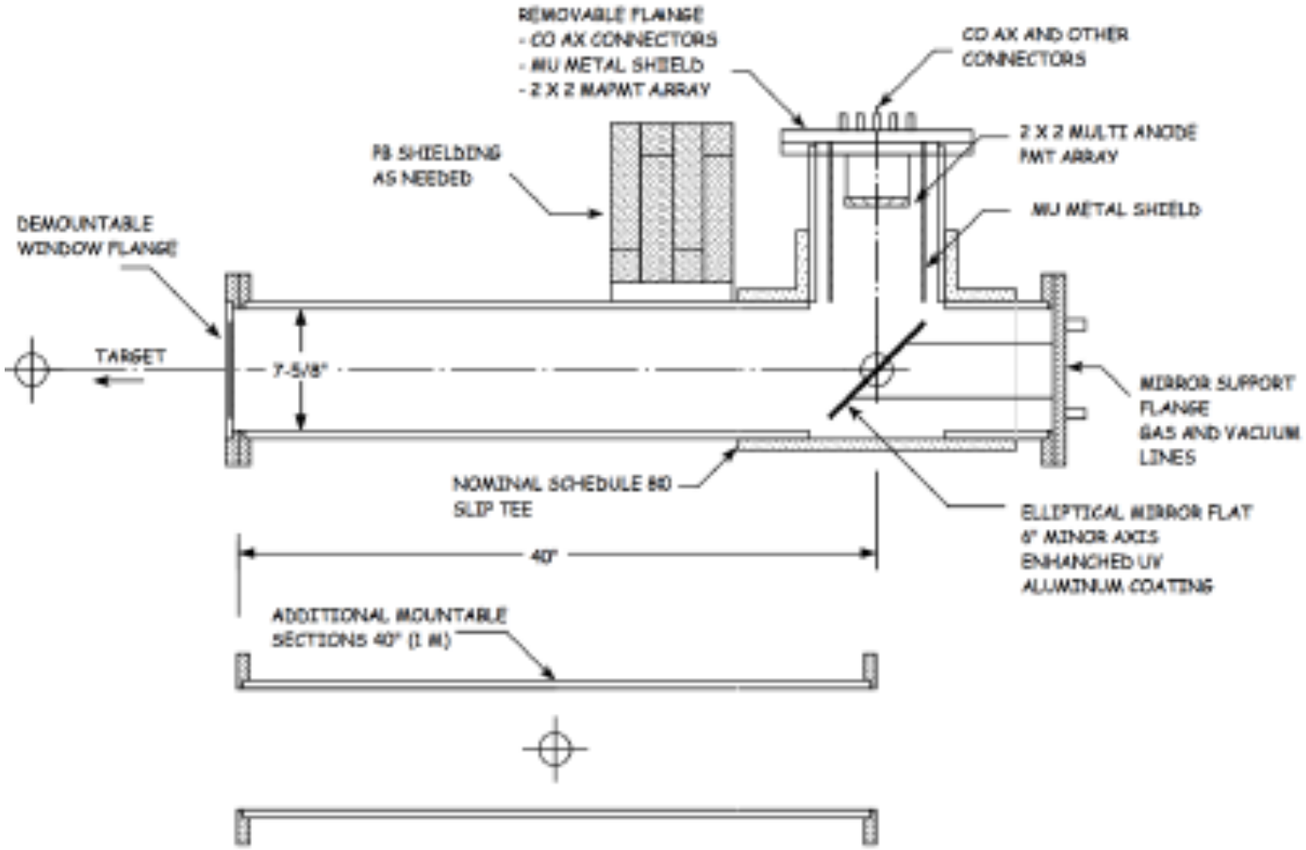
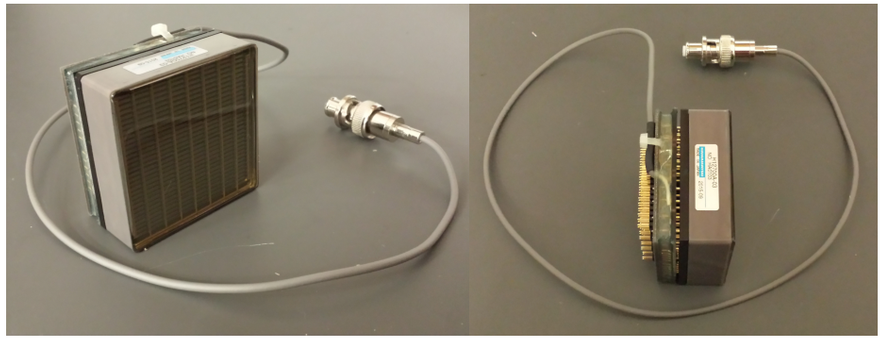
Bazooka Cherenkov Status

- Ideal to test **rate capabilities** of MAPMTs and DAQ
- Can be used **parasitically**
- Test MAROC and pattern recognition in MAPMTs

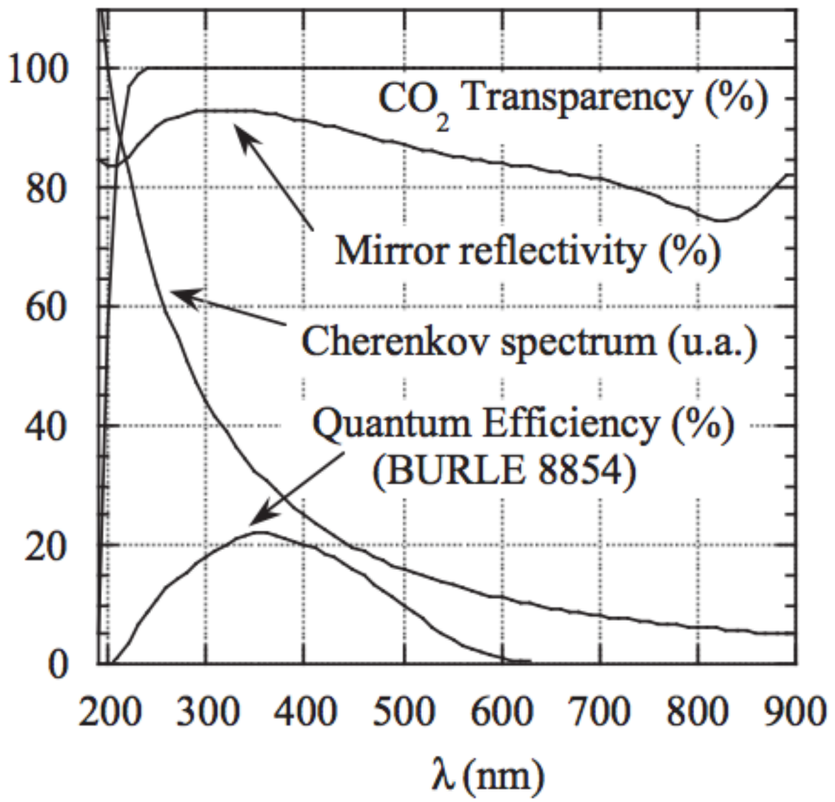


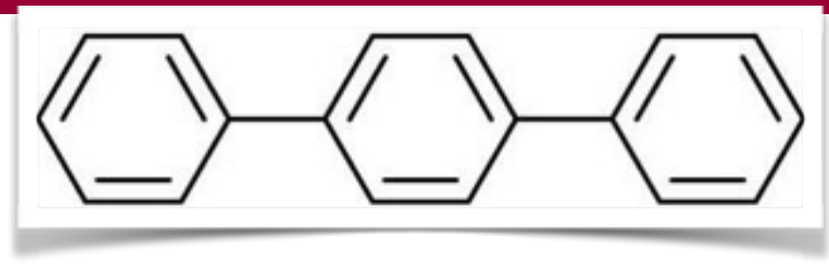
WORK IN PROGRESS!

p-Terphenyl WLS



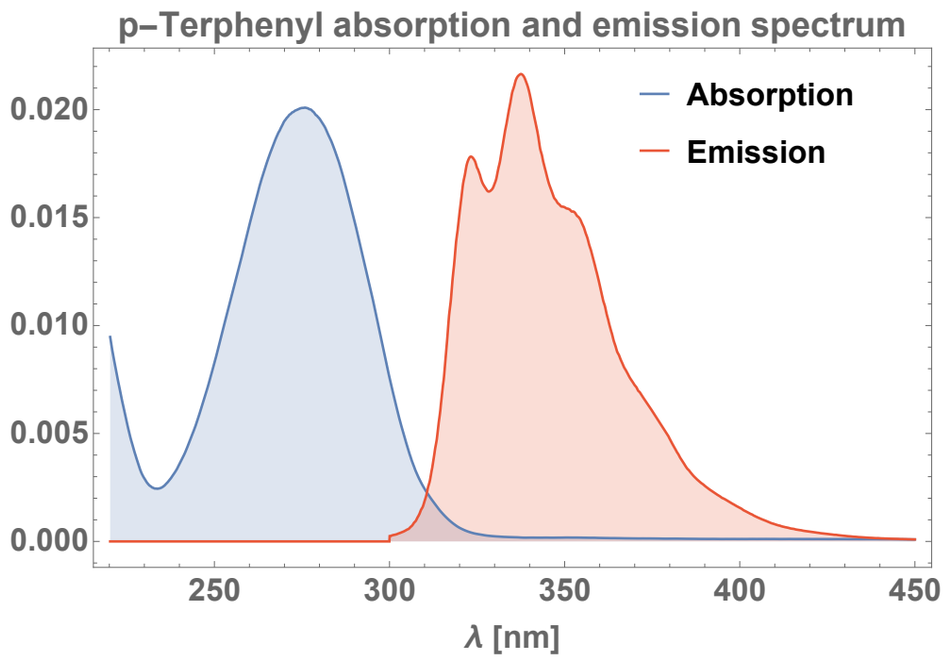
UV glass window of MAPMT **limiting factor** in Cherenkov efficiency





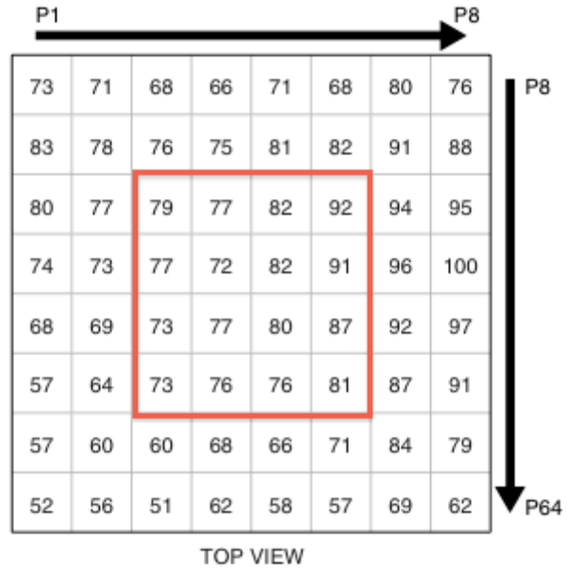
Thin coating of **p-Terphenyl WLS**

- Absorb photons below 300nm
- Emit two 300-400nm photons (isotropically, 2ns delay)
- Negligible losses due to re-absorption
- Large potential gain in Cherenkov detector efficiency!

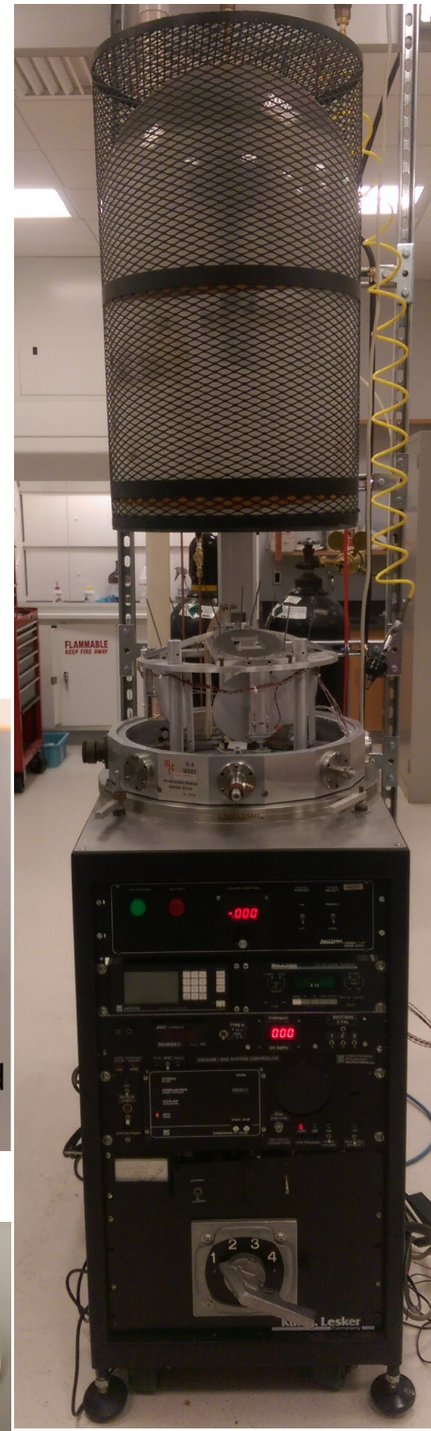


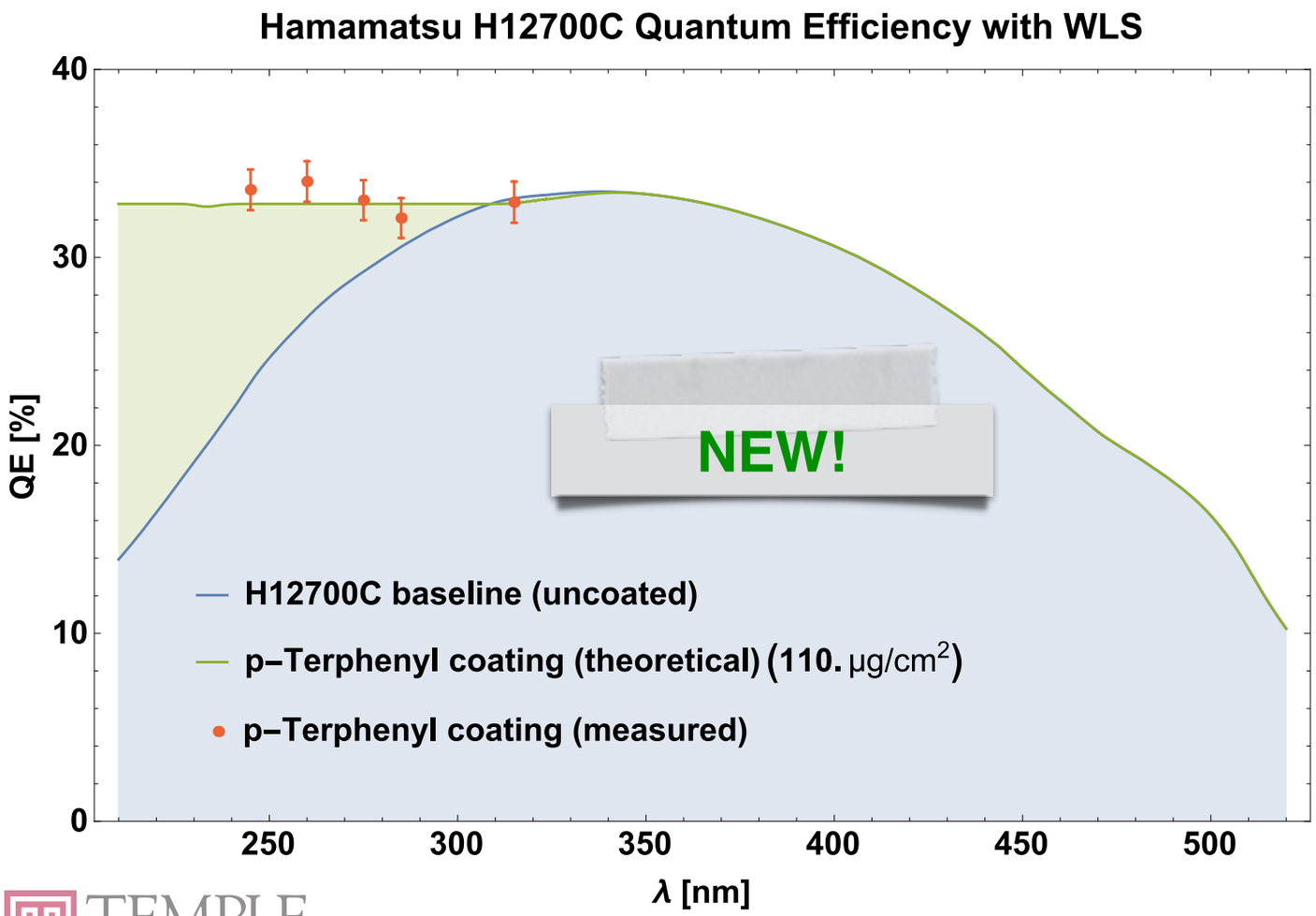
H12700C+WLS results

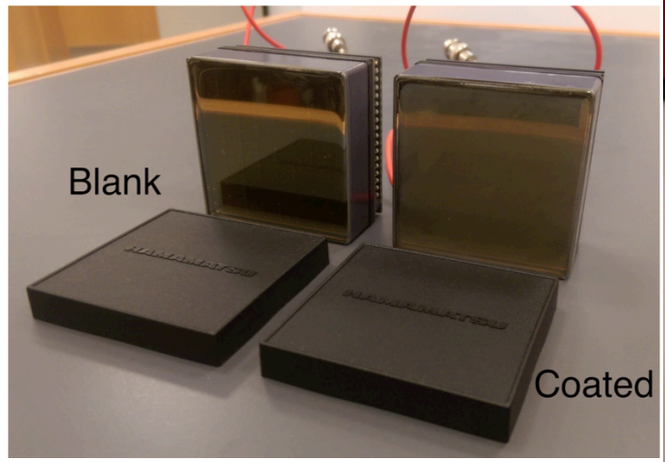
- Coating through **vacuum evaporation**
- Gain testing with 5 UV LEDs
- Results agree with expected gain, translates to **projected 30% gain** in Cherenkov efficiency!
- Ongoing: effects on resolution

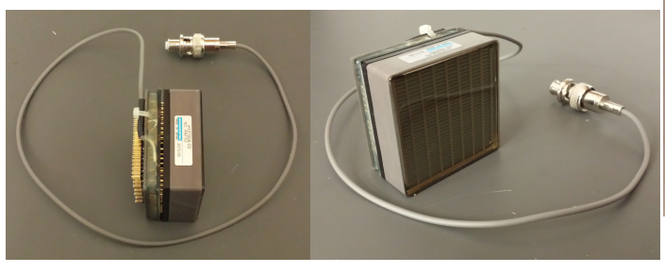


TOP VIEW









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LGC Simulation Status

- Fully integrated with GEMC 2.X
- todo:
  - Numerical matching between sectors of baffles and other sub-detectors
  - Less memory intensive method to implement the sensitive detectors (pixels) —> currently 17280 sensitive detectors!
  - Later: add digitization on ADC (FADC) level
- Trigger Studies are ongoing
  - Simple boolean trigger logic implemented (*n* PMTs with *m* photo-electrons)
- Design changes for background suppression?
  - Background with overestimated pion cross section (Wiser) were problematic
  - Todo: assess if still an issue with more realistic backgrounds
  - If needed, modify geometry to improve signal/background ratio

QUESTIONS?