

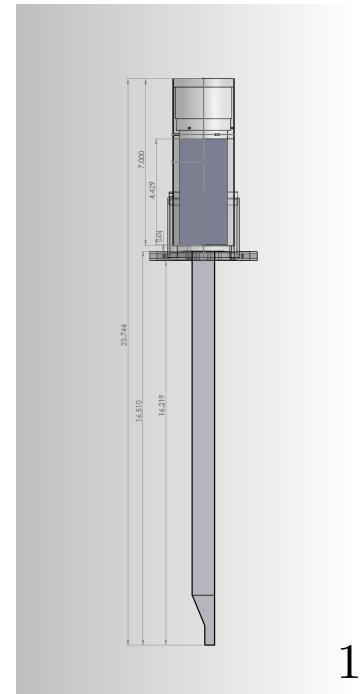
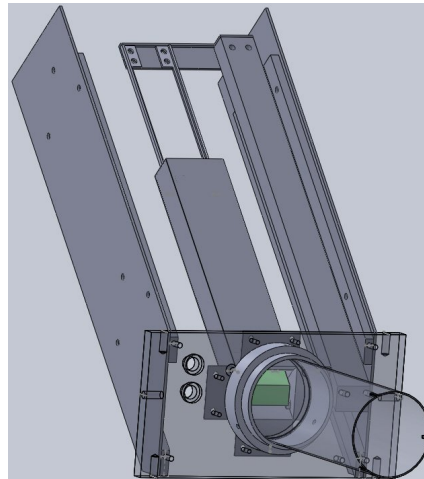
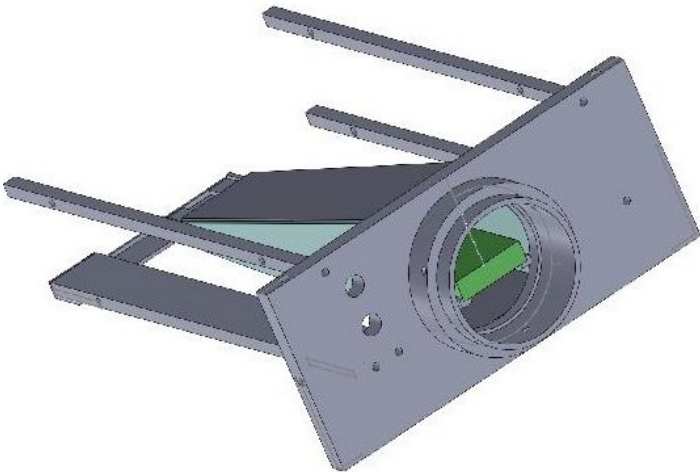
ISU plans for Mainz testbeam May 2015

Dustin McNulty

Quartz Detector Tests

Three designs to test:

- ISU design A: PREX-I style (quartz in-line with pmt)
- ISU design B: UMass des3 (quartz at 45 deg w.r.t. pmt)
- Lumi v1: Hall A luminosity monitor (conventional re-design)



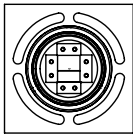
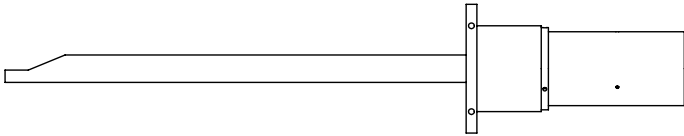
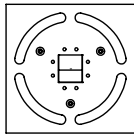
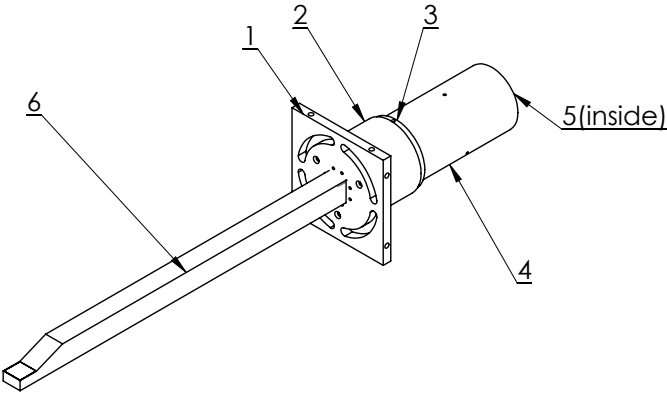
Designs A and B Quartz Detector Tests

For potential testing, we have:

- Four R7723Q pmts with mod and unmod bases
- Two PREX-geometry quartz pieces (35mm by 145mm face), one is 6mm thick and the other is 10mm thick
- Four different quartz – pmt separations: from 1 mm to 10cm
- Rotary table for any precision beam angle studies (if needed)
- Longpass filters: 280, 320, 400nm
- Can also use R375 pmts in these detectors—to see difference
- Have BC-630 optical grease ($n \simeq 1.465$, 95% trans. 280 - 700nm)
- Wrappings: Al. mylar, paint (don't have), ... ?

Quartz Detector Tests

Lumi version1: Should have all parts in time.

1	2	3	4	5	6																												
<div><div></div><div></div><div></div></div> <div></div> <table border="1"><thead><tr><th>ITEM NO.</th><th>PART NUMBER</th><th>DESCRIPTION</th><th>QTY.</th></tr></thead><tbody><tr><td>1</td><td>Front_Plate</td><td>.375 (3/8) thick 6061-T651 Al Plate</td><td>1</td></tr><tr><td>2</td><td>Tube holder</td><td>3.00 OD x .500 wall x 2.00 ID 6061 Al Round Tube</td><td>1</td></tr><tr><td>3</td><td>Plastic_Insert</td><td>White Delrin 3" rod</td><td>1</td></tr><tr><td>4</td><td>Mu_Metal</td><td>AD-MU-80 Tube</td><td>1</td></tr><tr><td>5</td><td>Plastic_tube</td><td>Black Delrin 3" rod</td><td>1</td></tr><tr><td>6</td><td>Mirror Plate (Folded)</td><td>0.20 Anolux MIRO-Silver Reflective Aluminium Sheet (Caution: no-scratch mirror surface required)</td><td>1</td></tr></tbody></table> <div><div><div>UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:</div><div>FINISH:</div><div>DEBUR AND BREAK SHARP EDGES</div></div><div><div>DO NOT SCALE DRAWING</div><div>REVISION</div></div><div><div><div><div>NAME</div><div>SIGNATURE</div><div>DATE</div></div><div><div>DRAWN</div><div>CHK'D</div><div>APPV'D</div><div>MFG</div><div>Q.A</div></div></div><div><div>MATERIAL:</div><div>WEIGHT:</div></div><div><div>TITLE:</div><div>DWG NO.</div><div>SCALE:1:10</div></div><div><div>Assem_LUMI</div><div>A4</div><div>SHEET 1 OF 1</div></div></div></div>						ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	1	Front_Plate	.375 (3/8) thick 6061-T651 Al Plate	1	2	Tube holder	3.00 OD x .500 wall x 2.00 ID 6061 Al Round Tube	1	3	Plastic_Insert	White Delrin 3" rod	1	4	Mu_Metal	AD-MU-80 Tube	1	5	Plastic_tube	Black Delrin 3" rod	1	6	Mirror Plate (Folded)	0.20 Anolux MIRO-Silver Reflective Aluminium Sheet (Caution: no-scratch mirror surface required)	1
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Lumi Quartz Detector Tests

For potential testing, we'll have:

- One prototype lumi detector support frame
- Four R375 PMTs with high gain bases (and unity gain base?)
- Lumi quartz geometry (conventional): 20mm by 20mm face by 10 mm thick; 4 pieces
- Multiple light guides: Four 40cm long (two Miro-Silver, one UVS, one Miro-Silver diffuse), one 34cm Miro-Silver
- Three tungsten pre-radiator thicknesses: 10, 15, 20mm
- Could test with and without dry nitrogen if available
- Also have speculative quartz geometry and light guide

Summary of Measurements

- Acquire pulse height distributions for various detector configurations (a lot here)
- Examine Incident angle sensitivity for Des. B configs
- Perform lumi lightguide bkgd measurement
- Perform longpass filter study?
- Perform position scan studies?
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Design B

