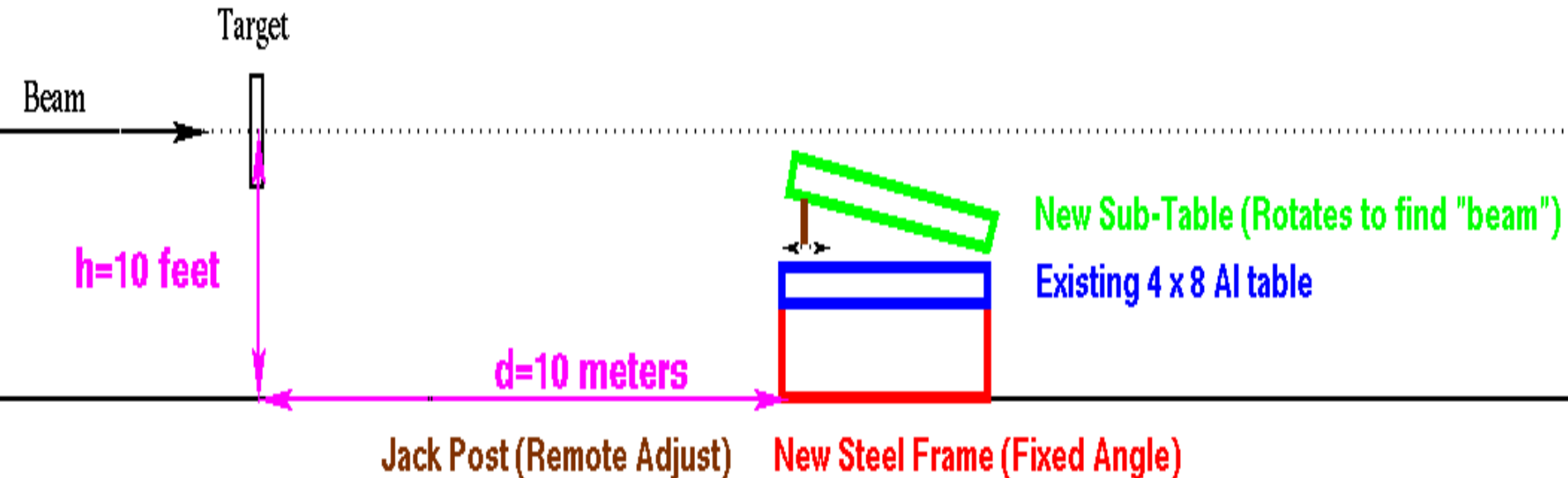




Progress/Status on Cherenkov Beam Test 4-14-2012

TK Hemmick

Reminder: Spring Test Config



- "Beam" consists of scattered electrons & pions.
- Particles must be "collimated".
- Need to point detector at target.
- Slide jack post back&forth via remote control.

Reminder: Layout


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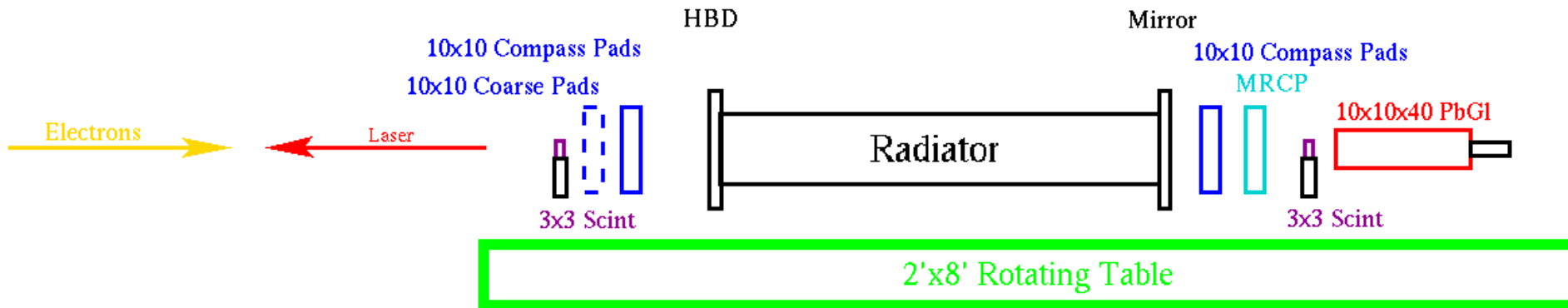
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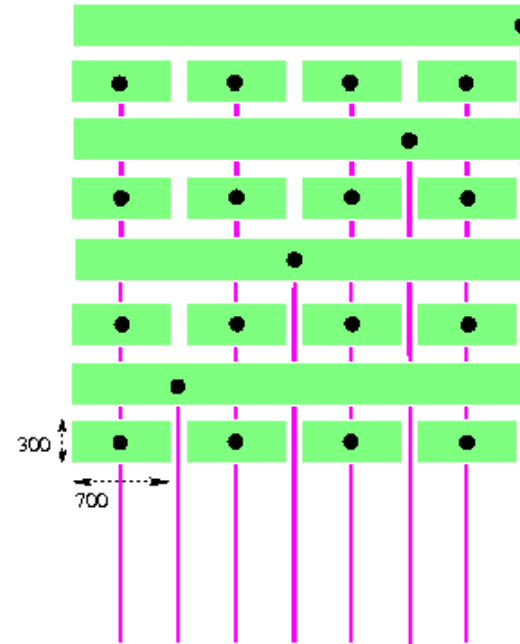
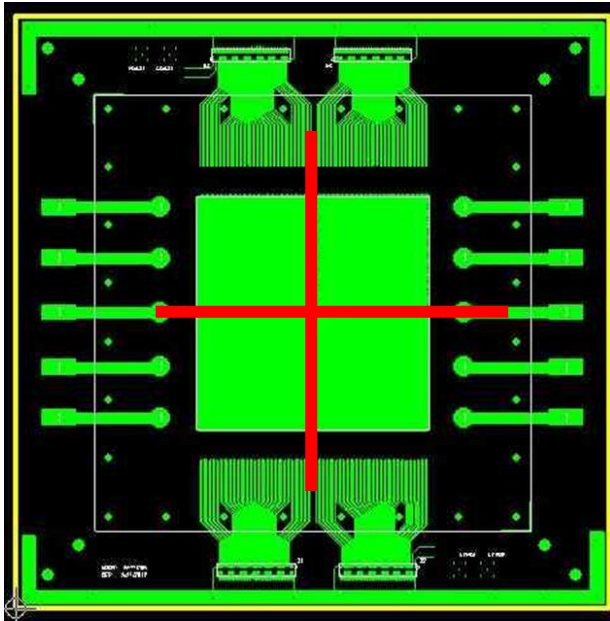
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- All aboard!
- Quintuple GEMstack (can always “shrink”).
- Need trackers to know each particle’s trajectory.
- PbGI is used to identify electrons.
- Bore site laser for initial alignment.
- Coarse pads in case scintillators fire too fast.
- MRCP??

Reminder: Segmentation



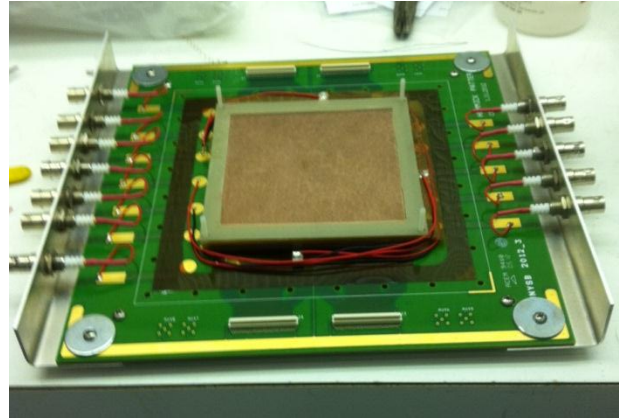
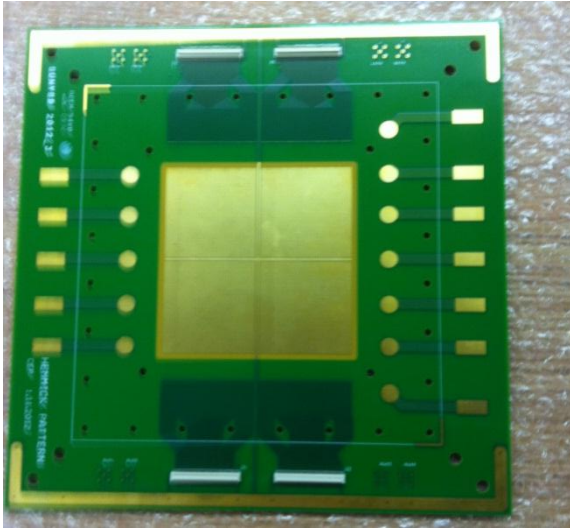
- RING images produce POSITION CORRELATION!
- Ambiguity for Compass (Cartesian) Coordinates
- SOLN: New pad plane
 - $\frac{1}{4}$ rings in four quadrants
 - STAR-style strip-pixels.

Progress: Lift Table

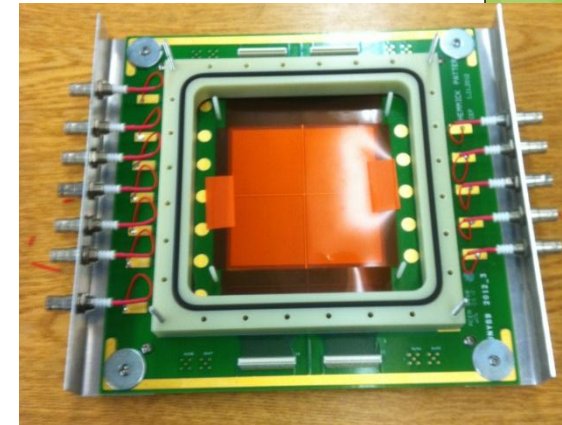


- Lift Table design: Benji Lewis (postdoc)
- Lift Table build by SBU Machinists.
- Required: ~10 degrees.
- Lifts machinist for 7 degrees and above.

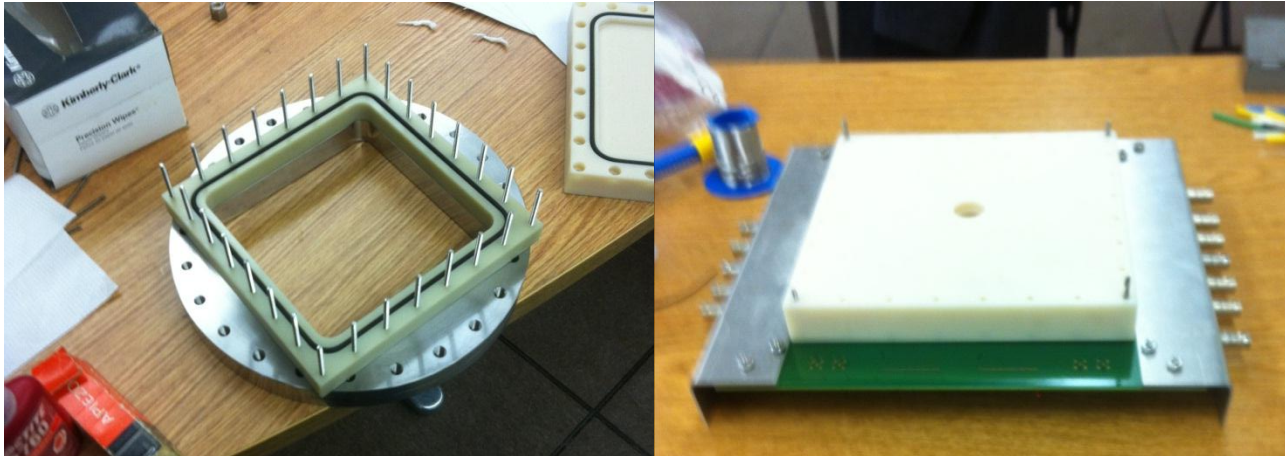
Progress: Pad Plane



- Pad Plane Design, SBU Engineer Chuck Pancake.
- Pad Plane(s) delivered 3 weeks late.
- Good News: Pin test was free.

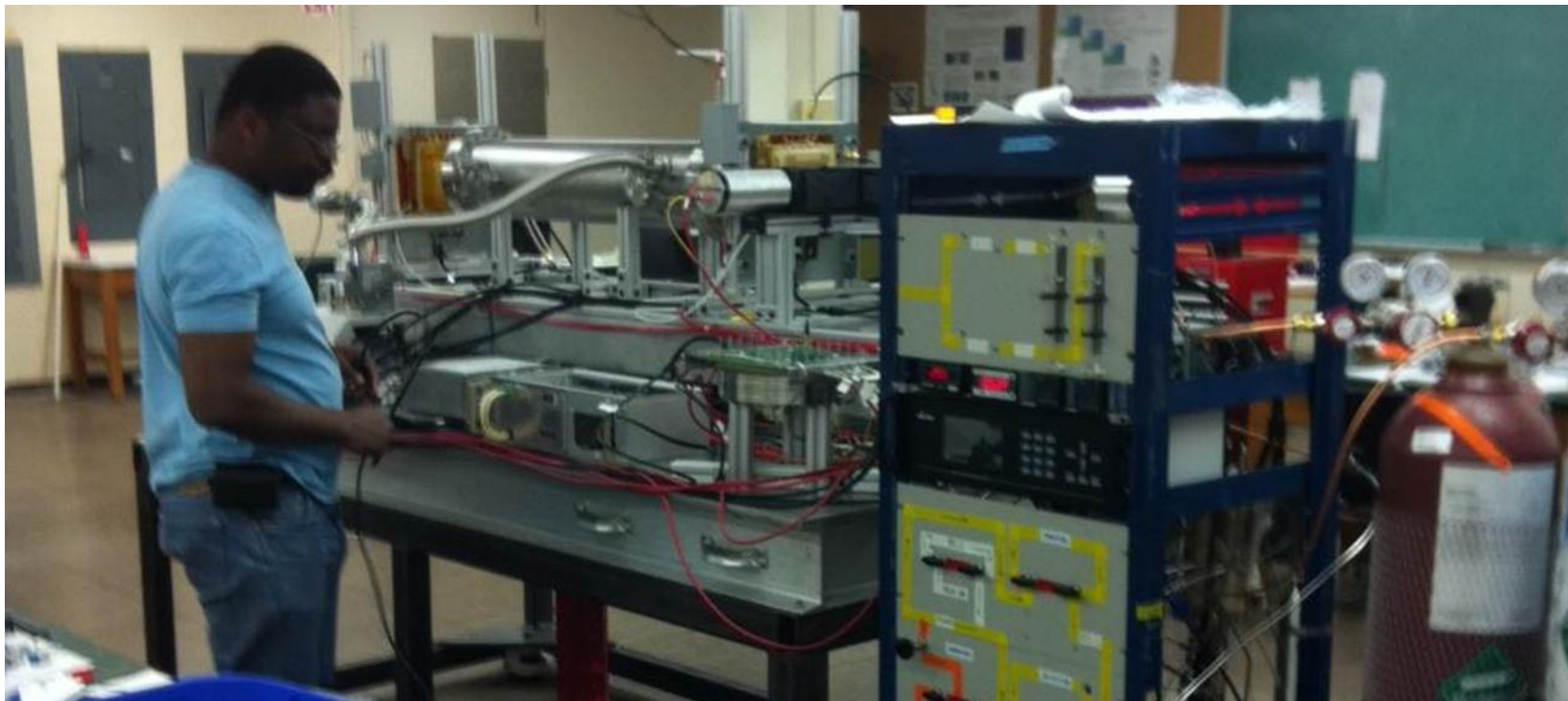


Pad Plane Vacuum System



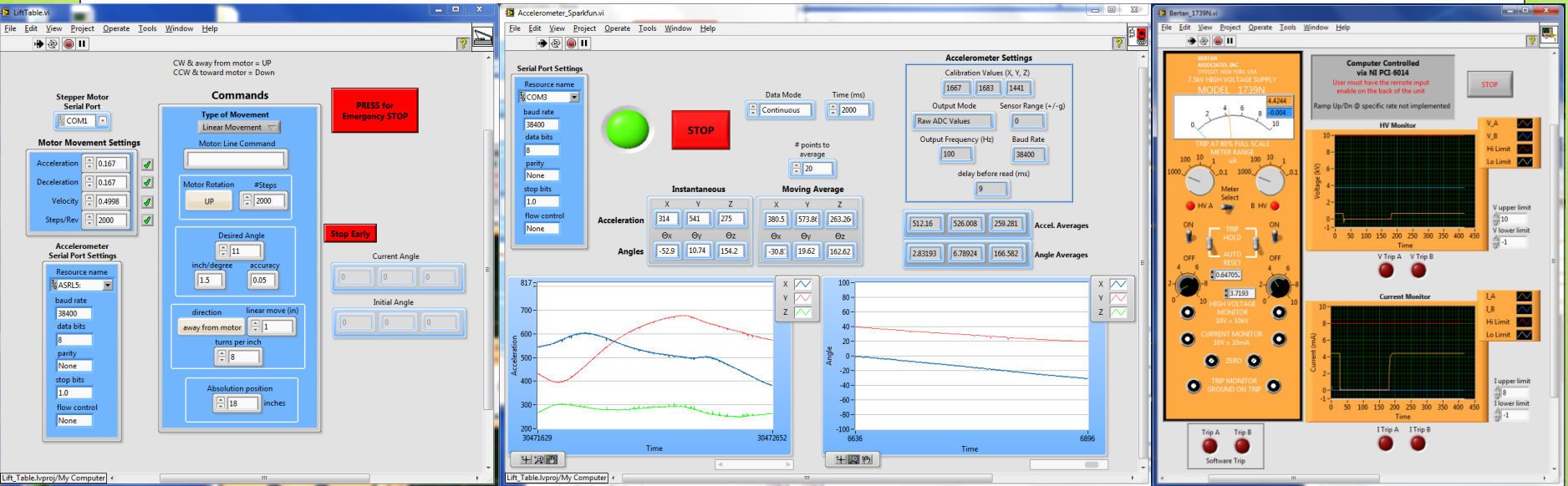
- ◉ Desire: Pump to change gas.
- ◉ Challenge: Pad plane can't withstand diff. pressure of 1 atm.
- ◉ Solution: Pump both sides using removable flange.

System Assembly



- Kondo and Kiad (UVA) bring trackers & DAQ.
- Calorimeter from M. Jones.
- Gas System running: 1ppm O₂ 0.23 ppm H₂O

Remote Control Software

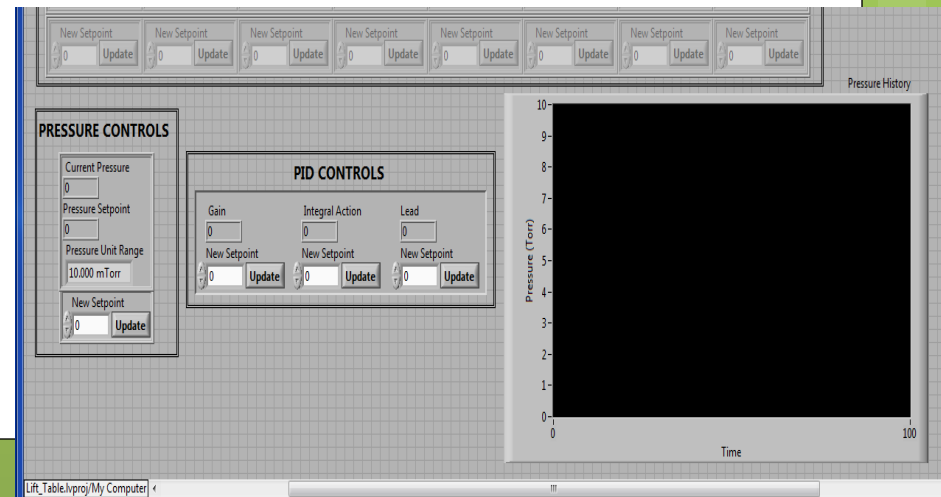


Lift Table

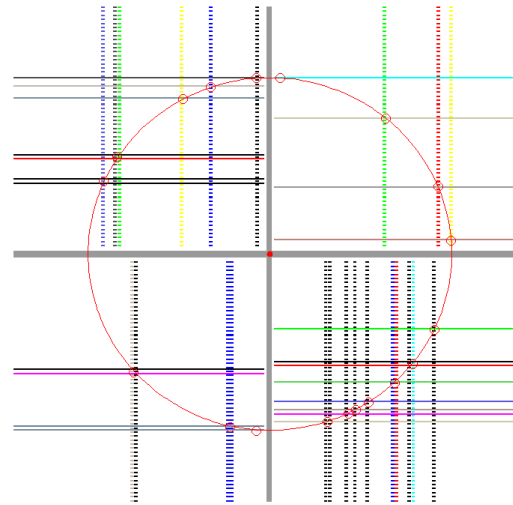
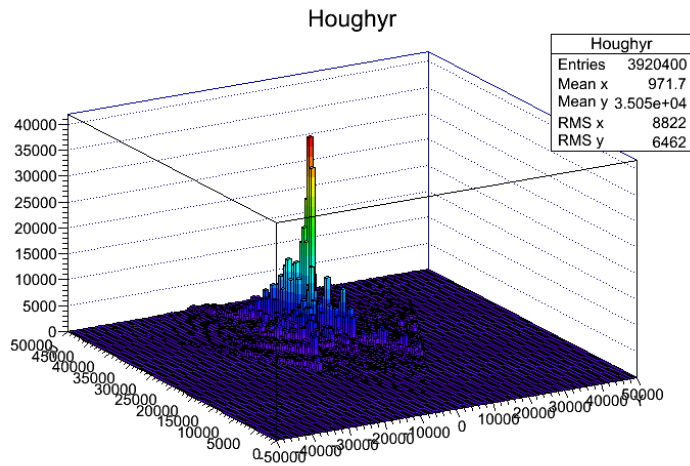
Lift Table

Tracker HV

- Author mostly Benji Lewis
- Gas System: Ben Chonigman.



Analysis Software



- Combinatorial Hough Transform:
 - Any three points define X_{center} , Y_{center} , R
 - Pseudo-points: all X/Y combinations in a quadrant.
 - Fill 3D histogram with X,Y,R...peak bin = ring.
- Graduate Student: Huijun Ge

What could be missing?

Mirror, Mirror



- **Finally arrived!**
- **2 mirrors... reflectivity ($>80\%$ down to 120 nm)**
- **Aligned in two steps:**
 - Laser hits mirror center & reflects back to itself.
 - Laser hits target in Hall A.

Csl cathode done.



- Vessel goes into Glovebox
- Installed Thursday night.
- Tests Friday

- **CONCERN:**
One GEM started to draw current last night



April 15 (if GEM recovers)

- ◉ Drive on Sunday.
- ◉ Work with Kondo more on DAQ Monday.
- ◉ Install Tuesday.

- ◉ If GEM requires replacement.
 - ◉ Have spares.
 - ◉ Place vessel in glovebox.
 - ◉ 2 days to get below 10 ppm water.
 - ◉ 1 day to replace & start CF4.
 - ◉ 1 day to test.
 - ◉ Delivery next week only ☹...