Install of Triplet Polarimeter in Hall D

- Installation in hall (4/8, 4/9)
- Reconnecting cables (4/13, 4/14)
- Testing connections (4/14)
- Installing foils (4/15)

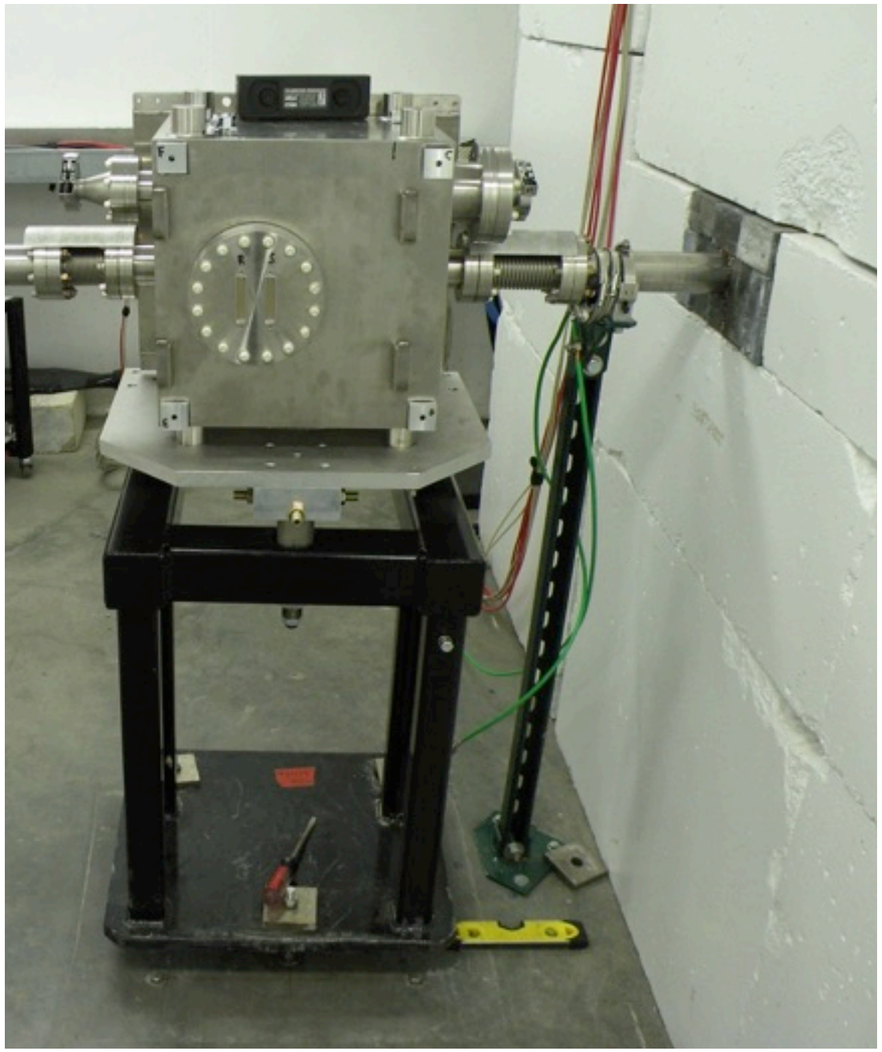
April 15, 2015

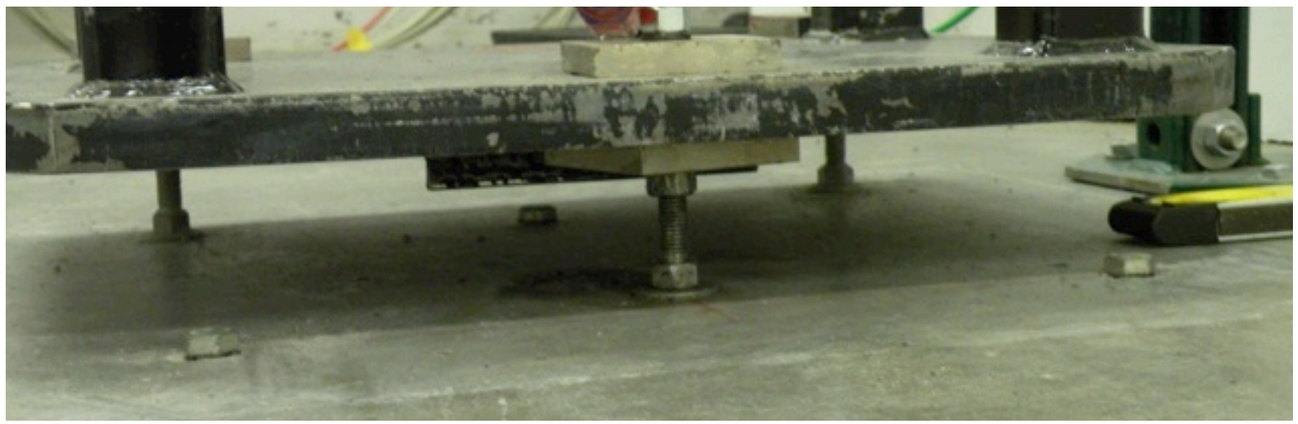
Kei Moriya, Michael Dugger

Arizona State University

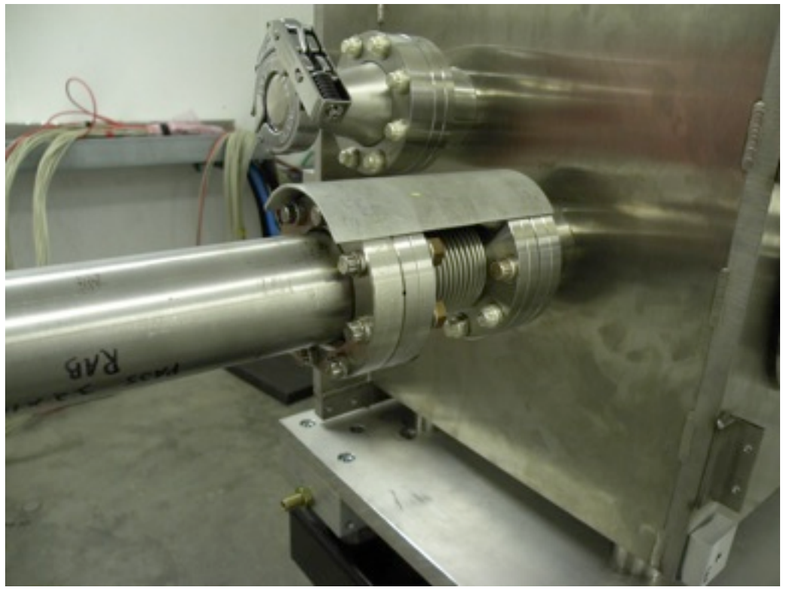
Installation in Hall

- Installed in beam line

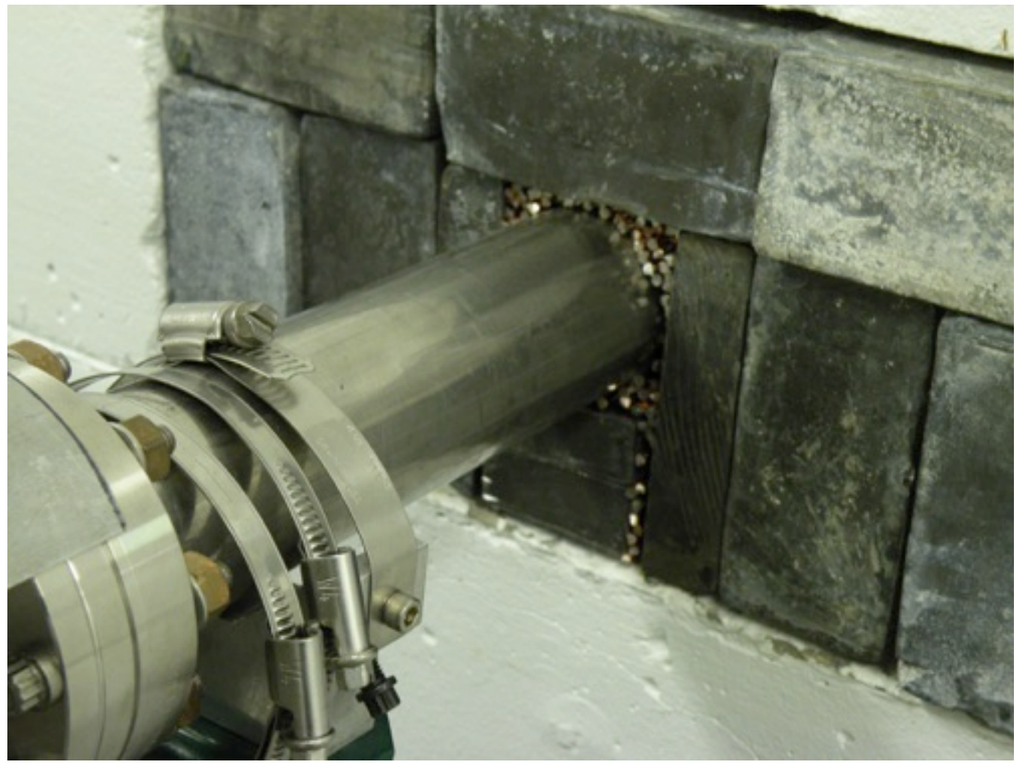




Surroundings

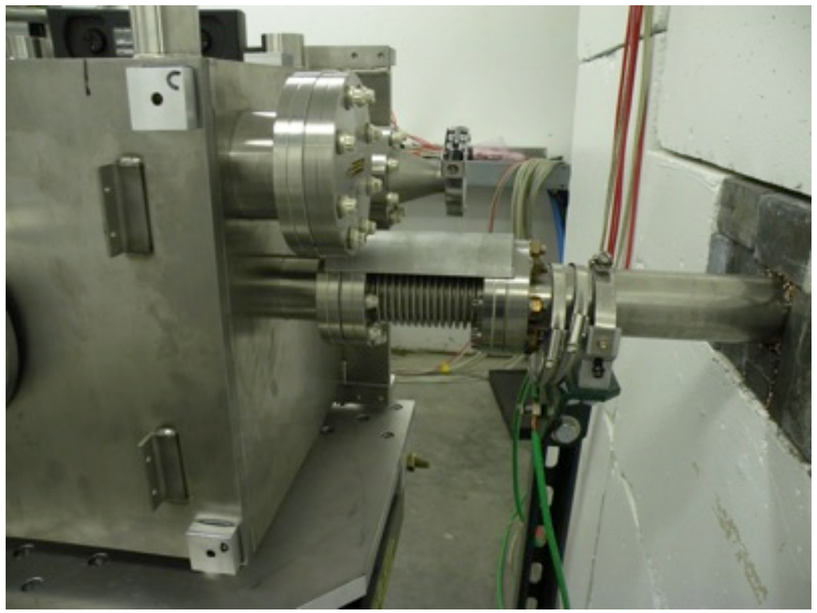


upstream flange



downstream wall

downstream flange



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Collimator Cave

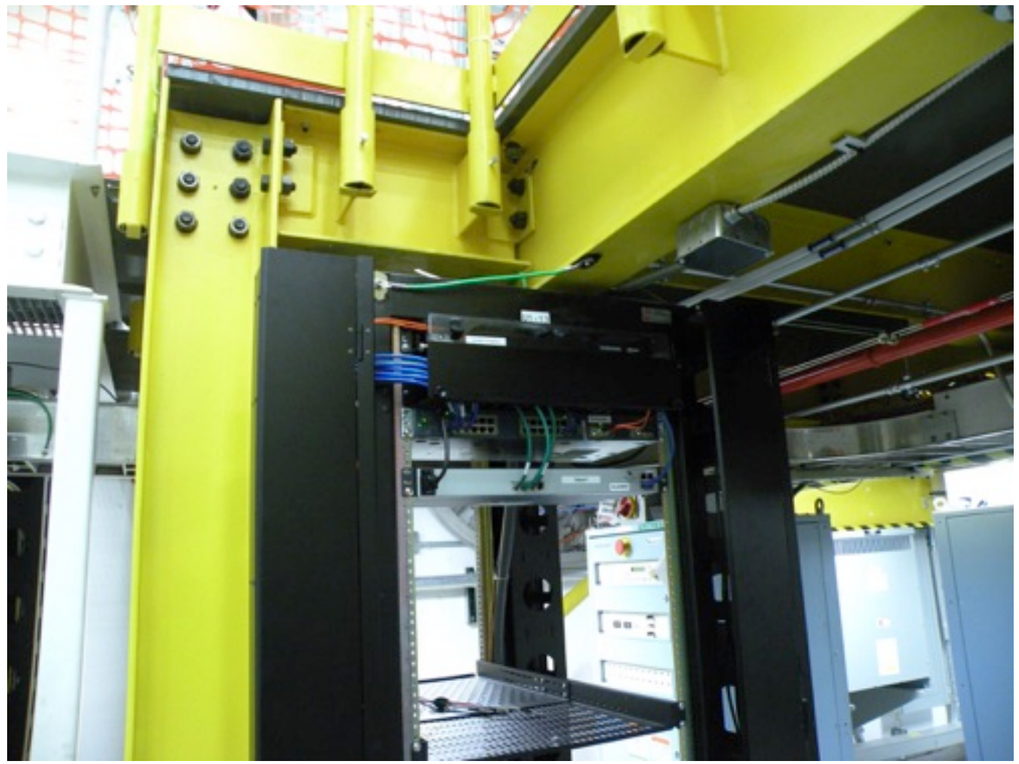
Re-connections

- Preamp and distribution box are now back on chamber (thanks to Nathan)
- Tom, Keith working on putting on turbo pump

Electronics Rack

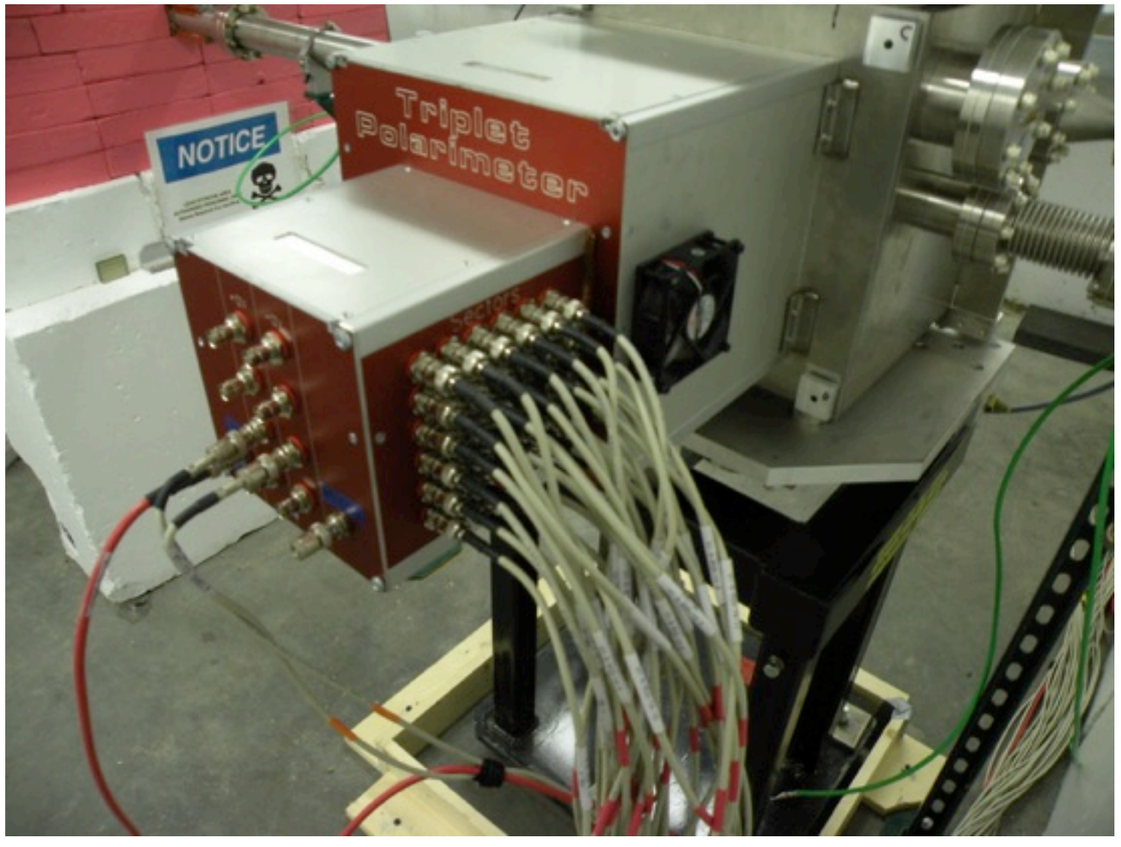
- Our rack is called U1-13

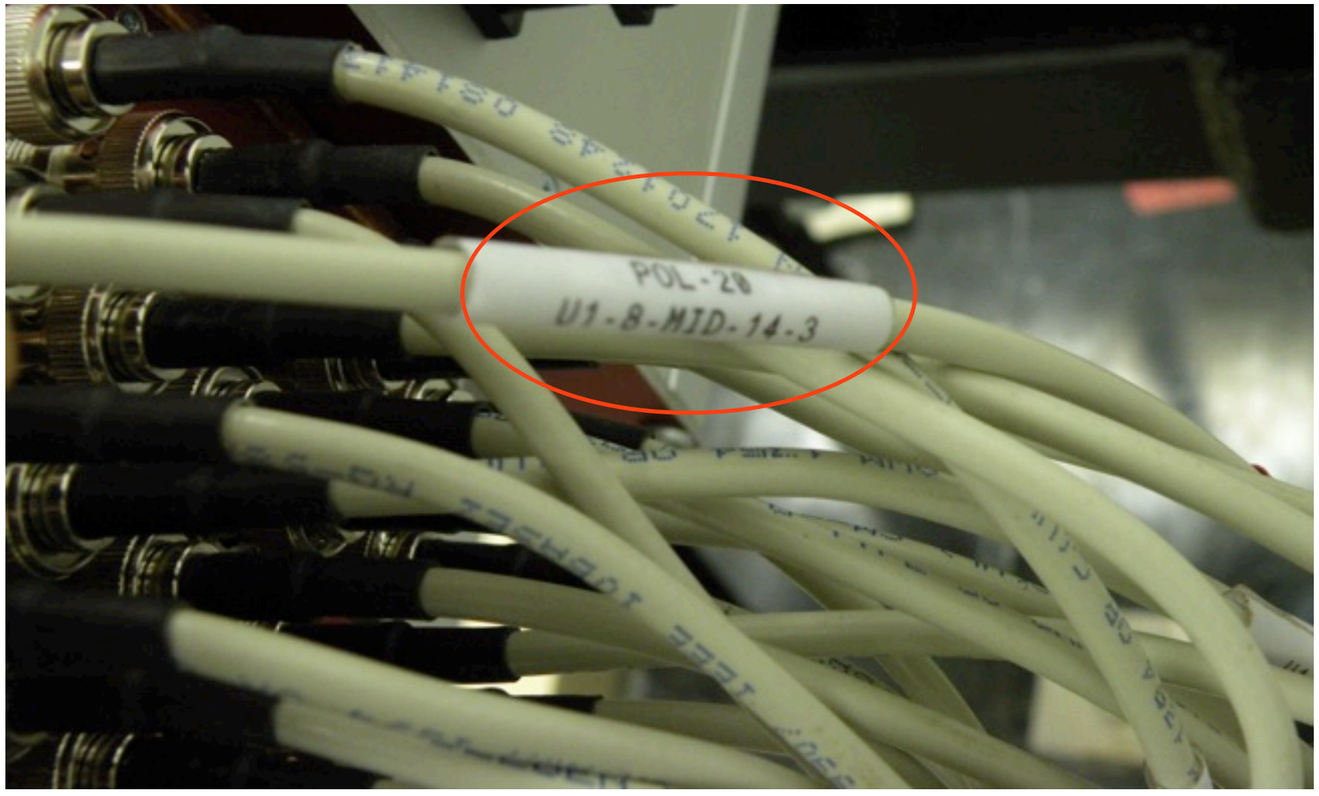
polarimeter
HV, LV rack



Signal Cables

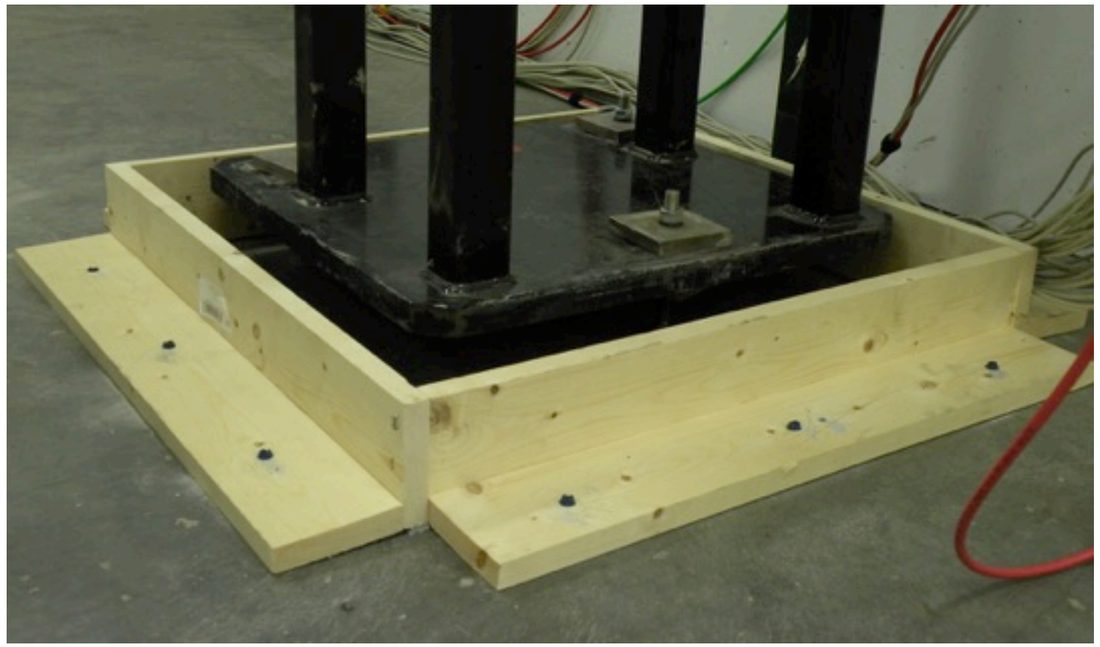
- Signal cables connected based on Mike's documentation of channels

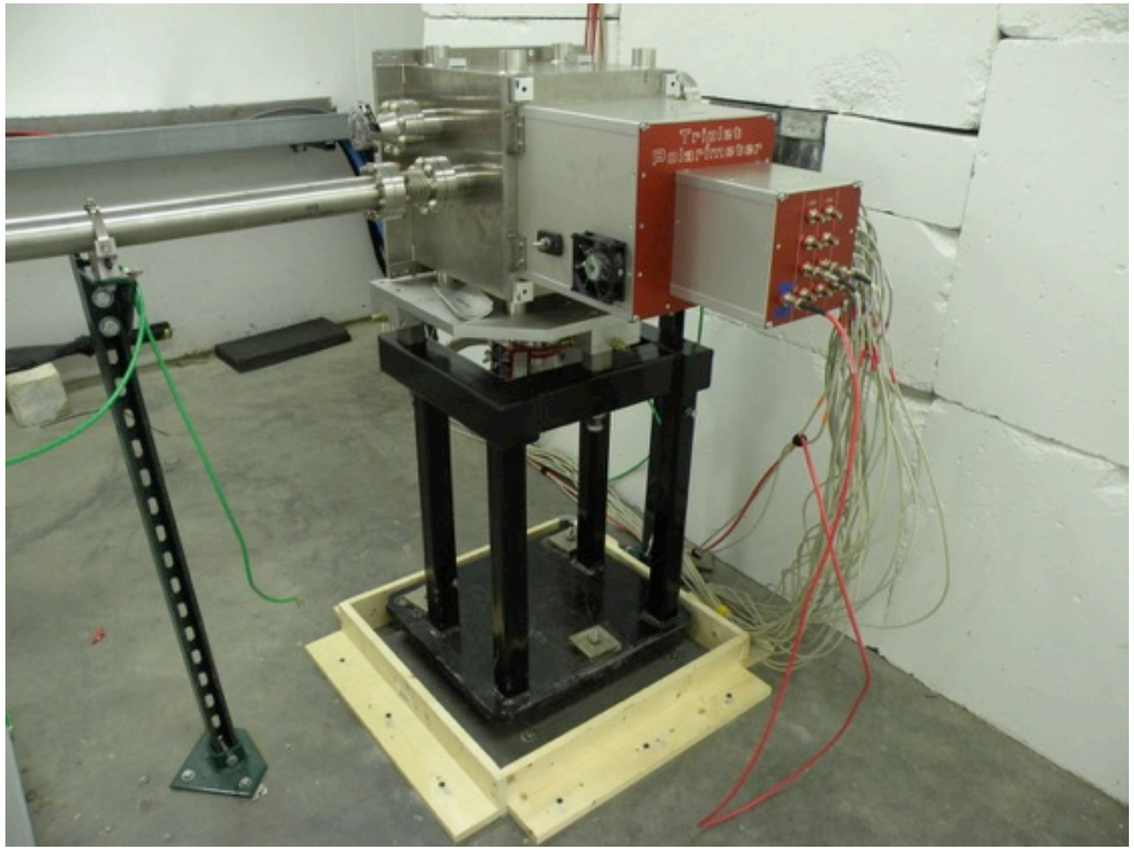




Chamber Stand

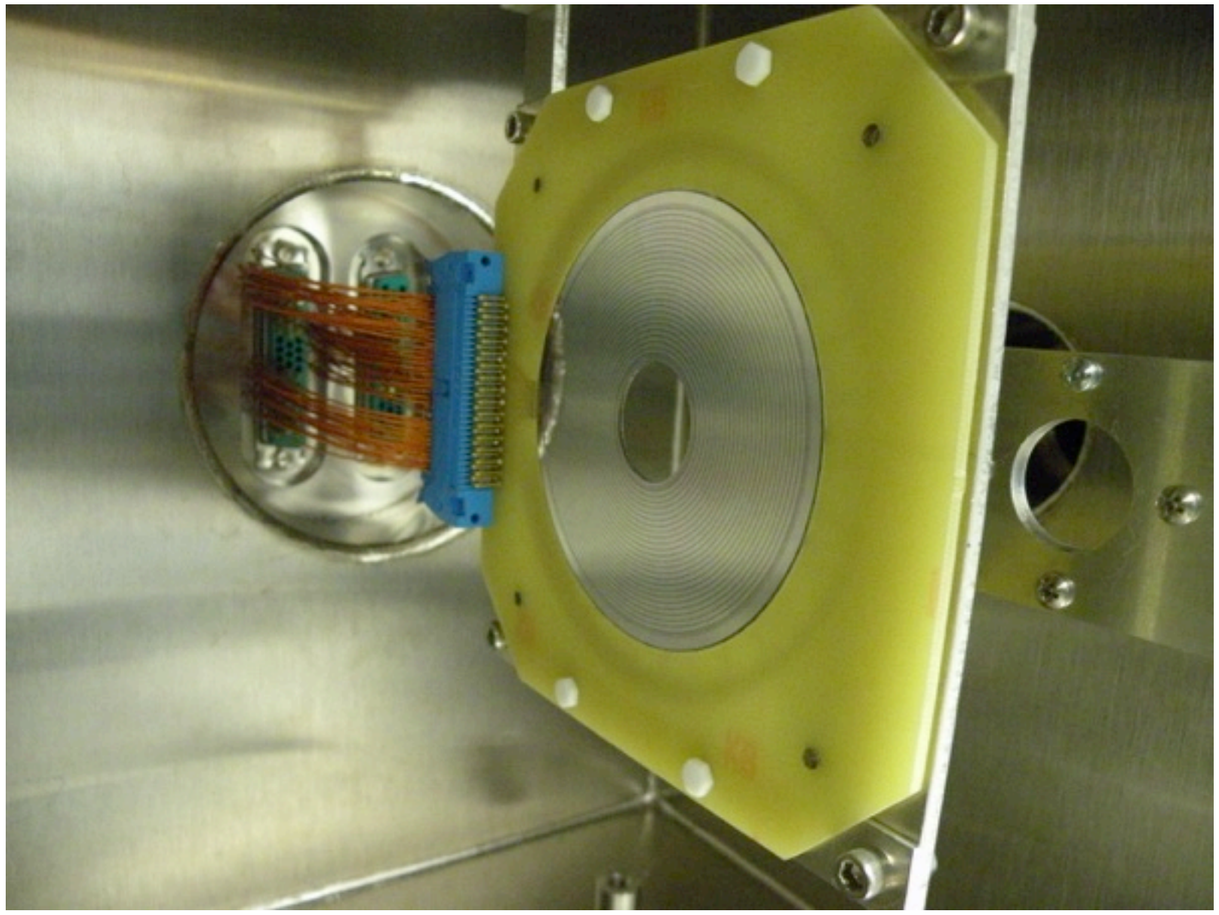
- Newly built





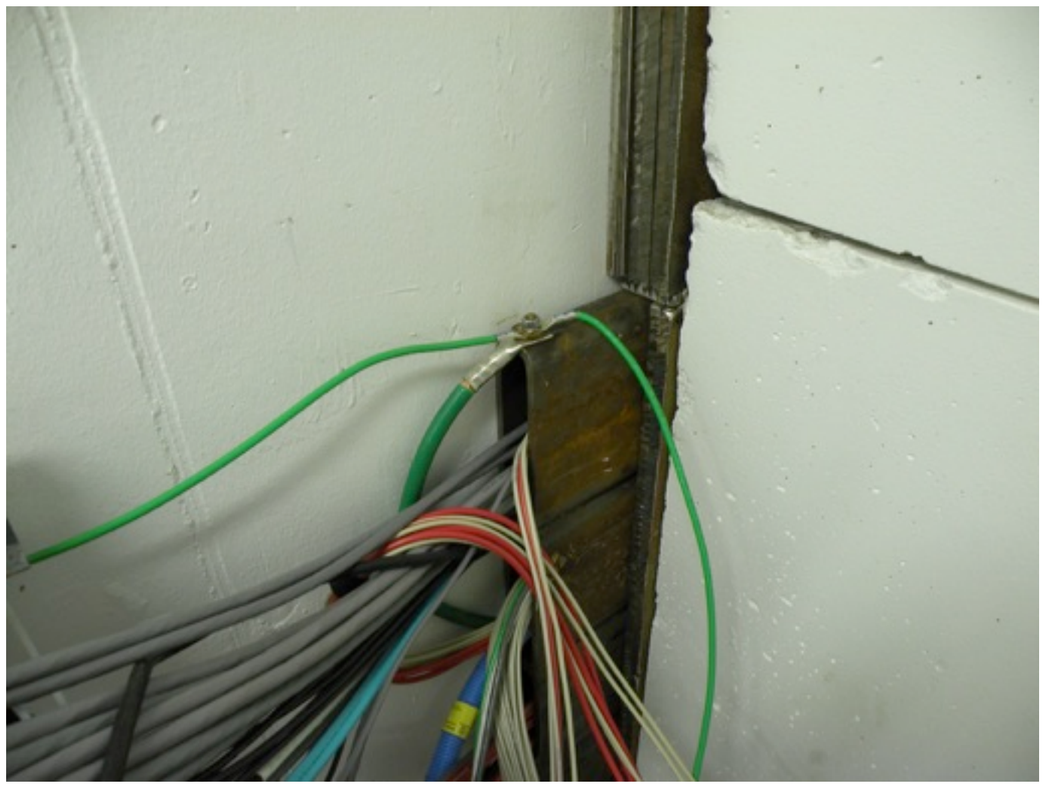
Detector

- In vacuum chamber



Ground

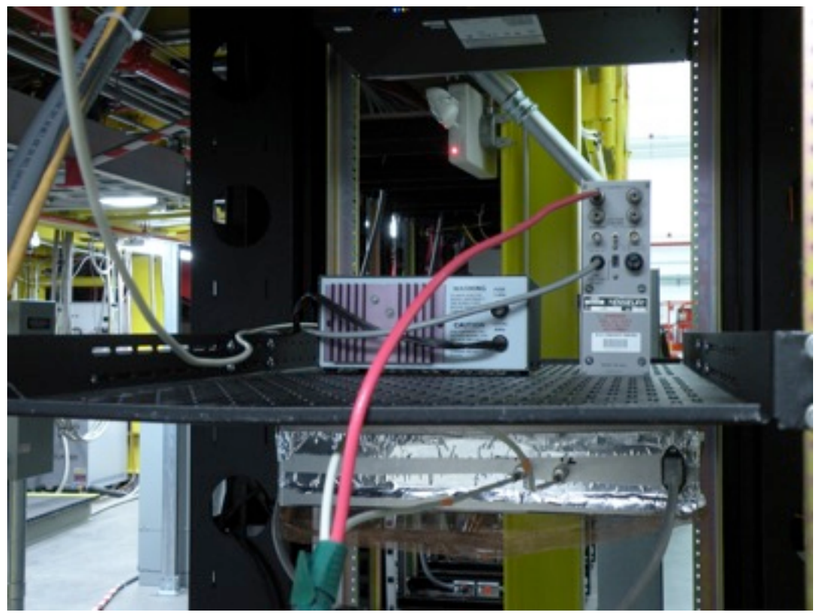
- Ground connected to far corner of walls



Power Supplies

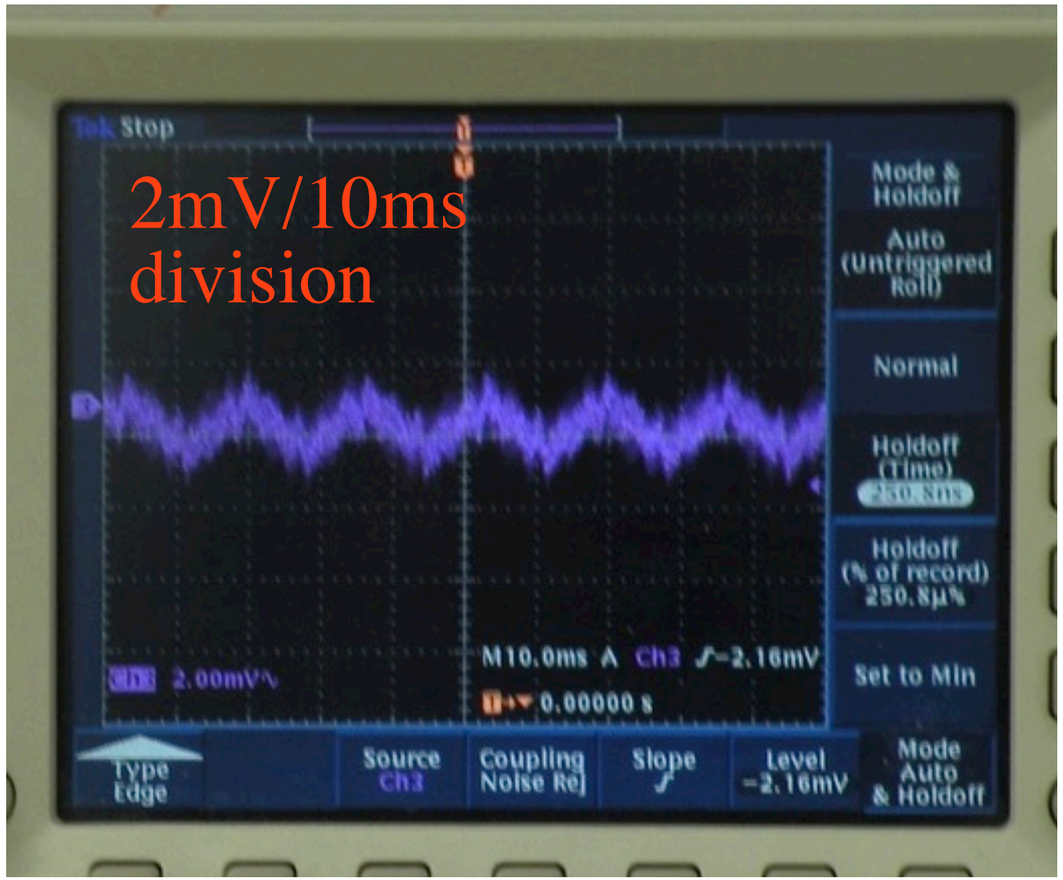
front view

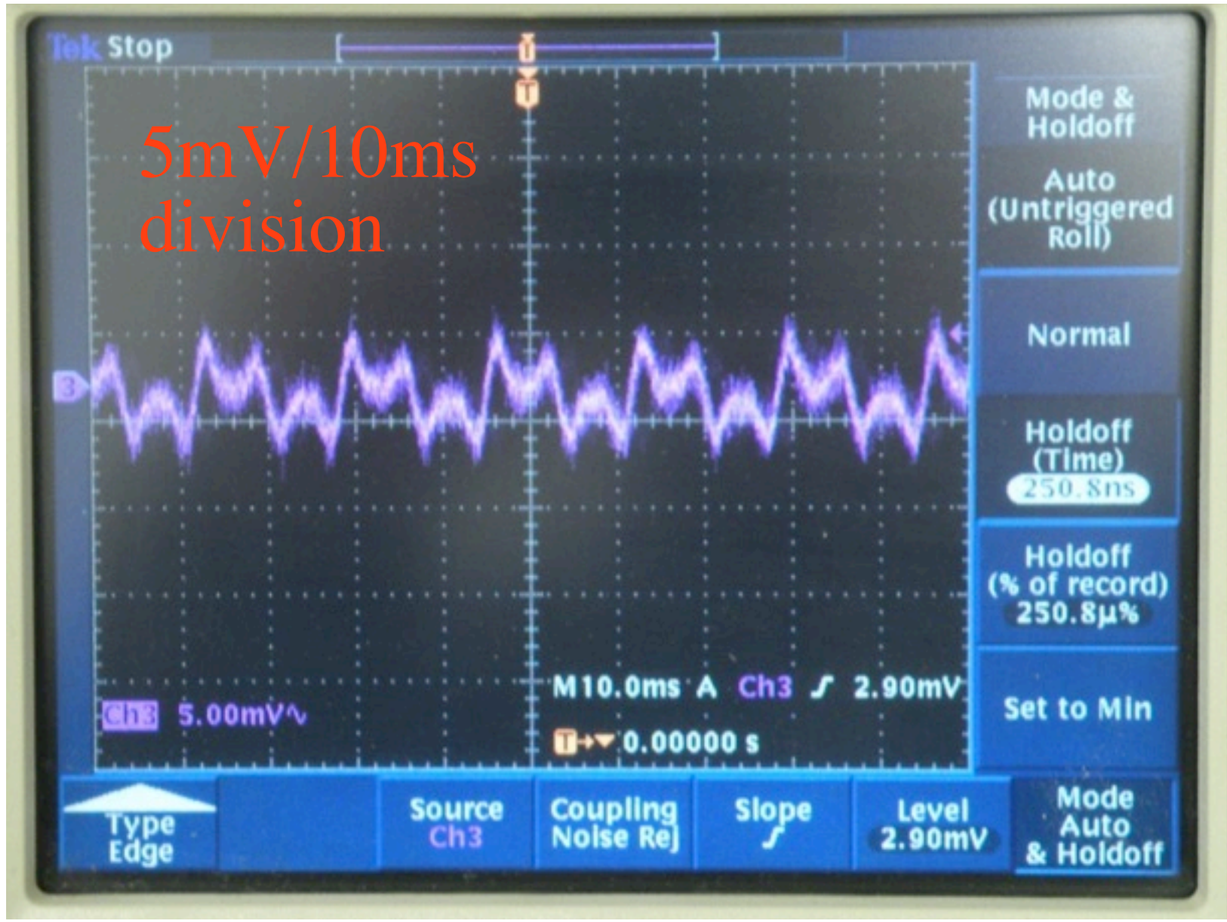
back view



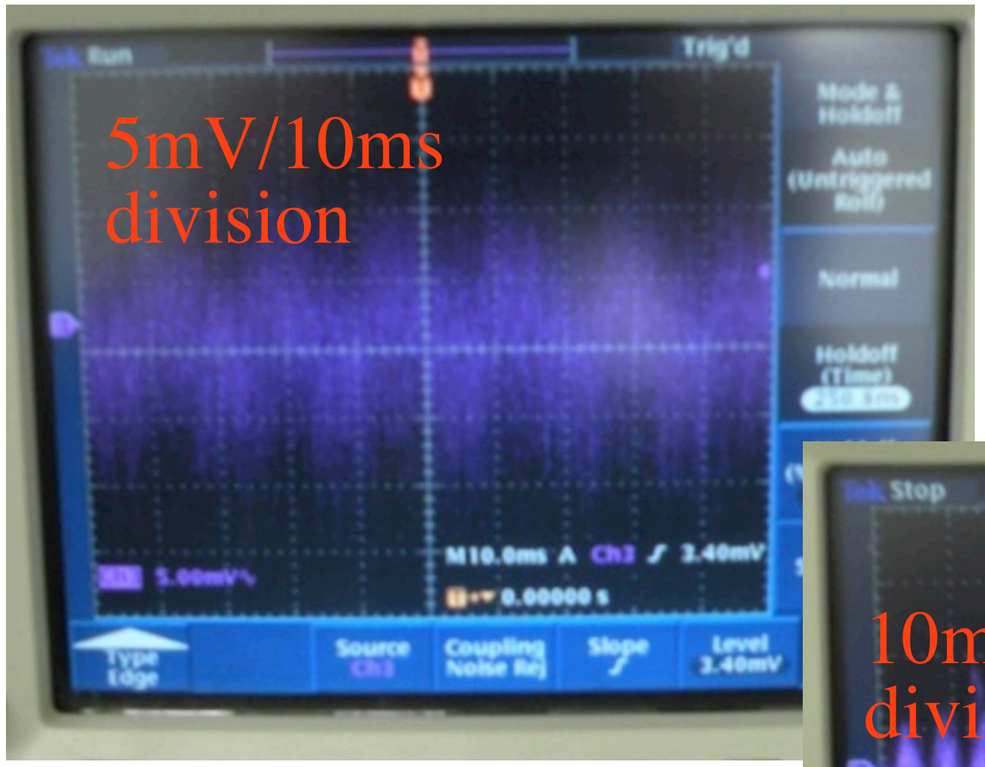
Noise Levels

good examples

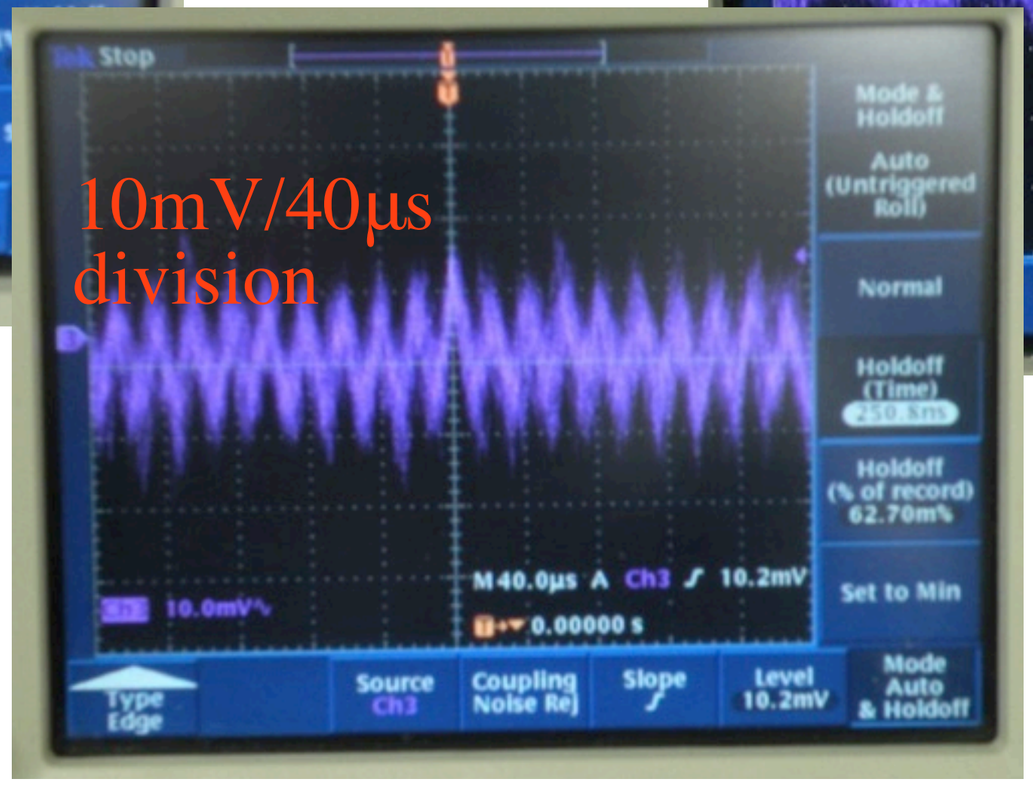


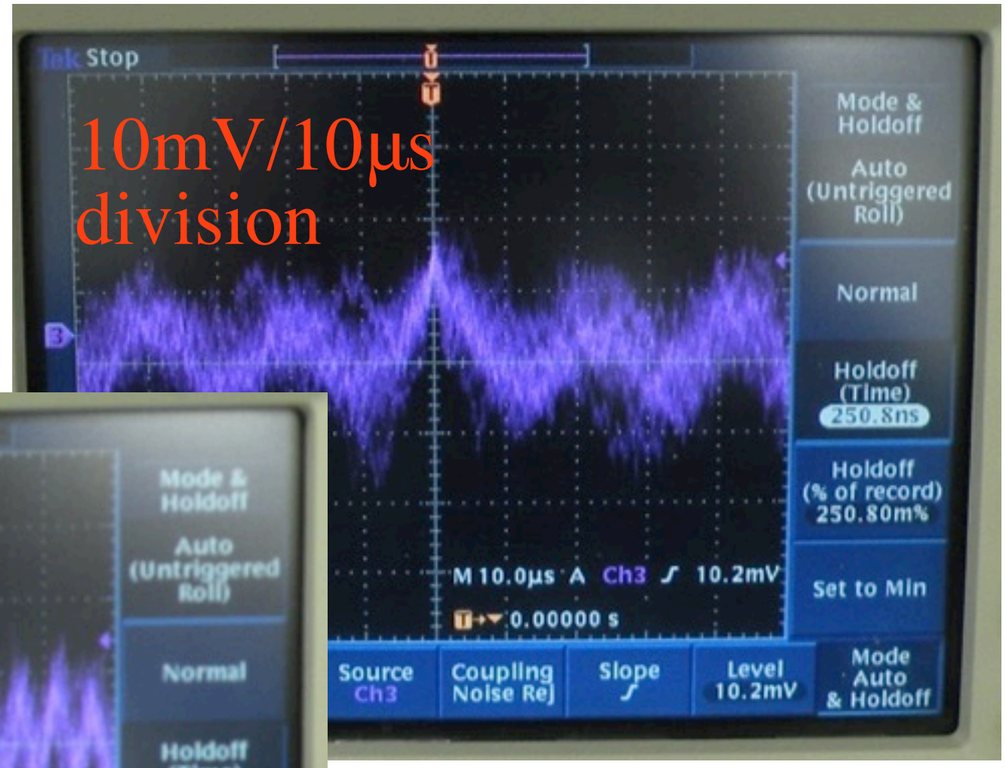


Noise Levels



bad examples





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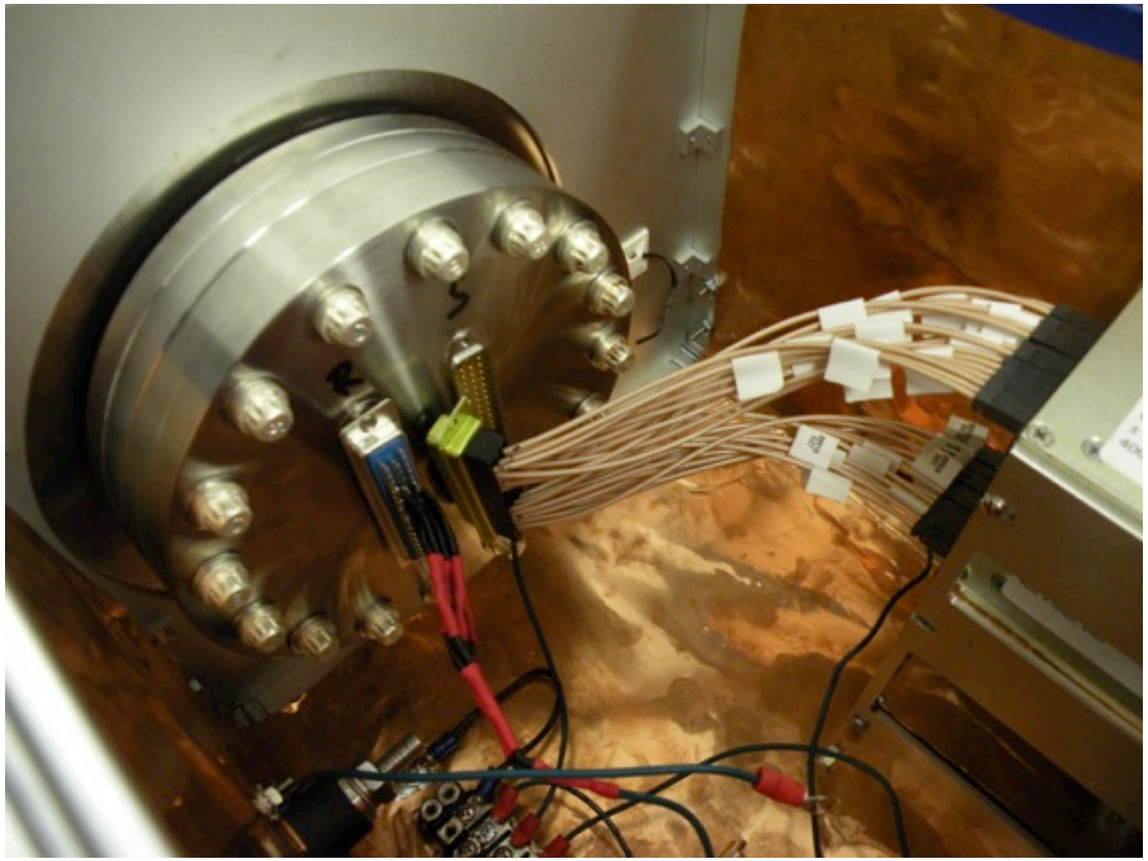
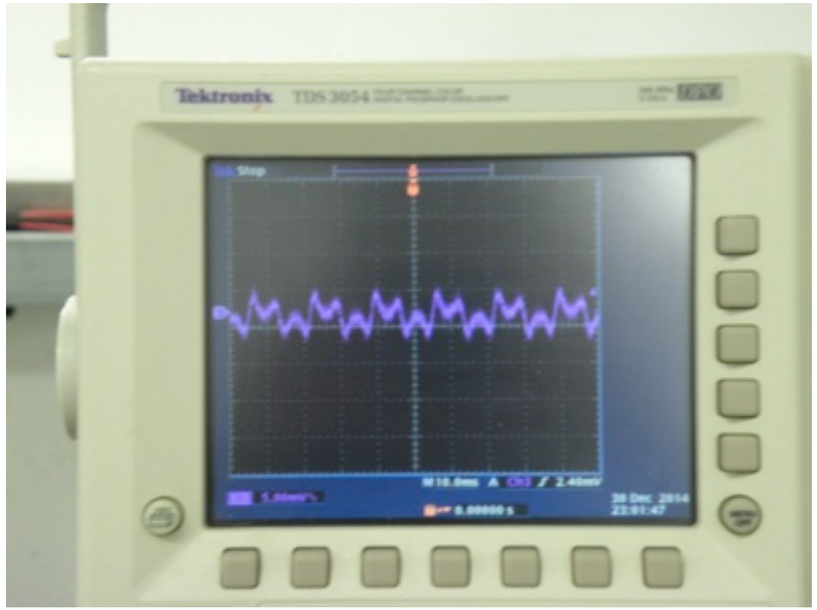
Take Out D-sub

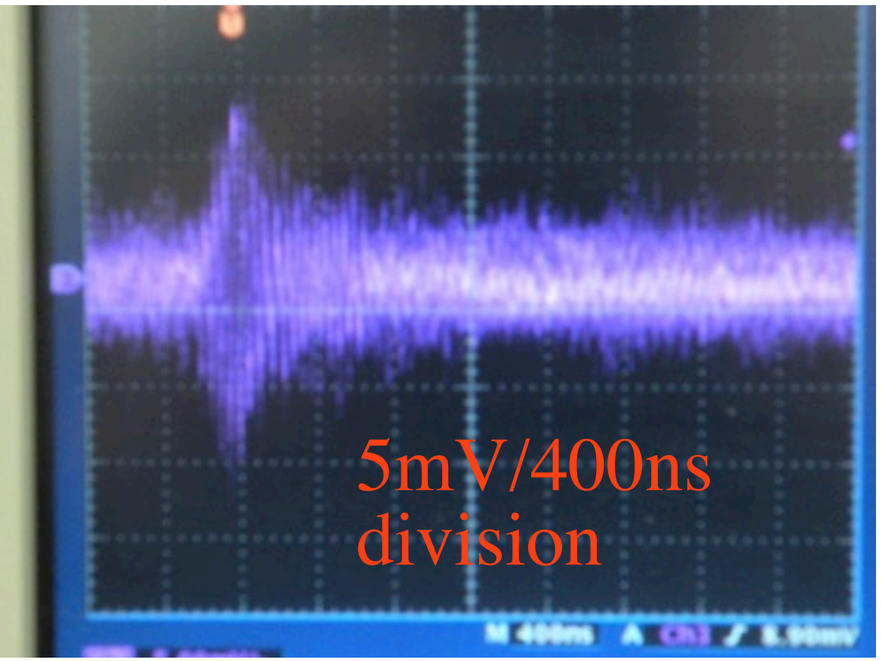
disconnect output
from detector

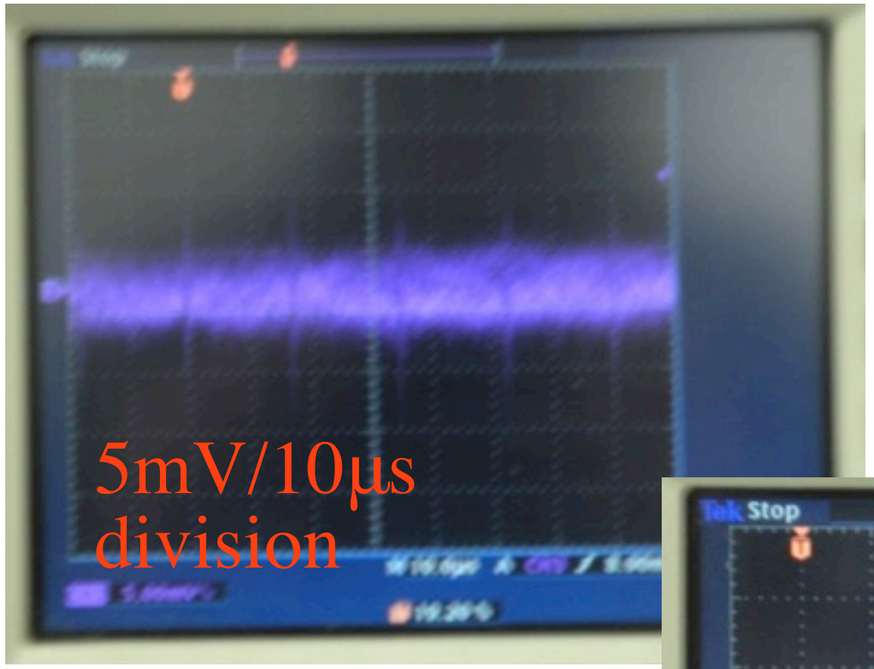


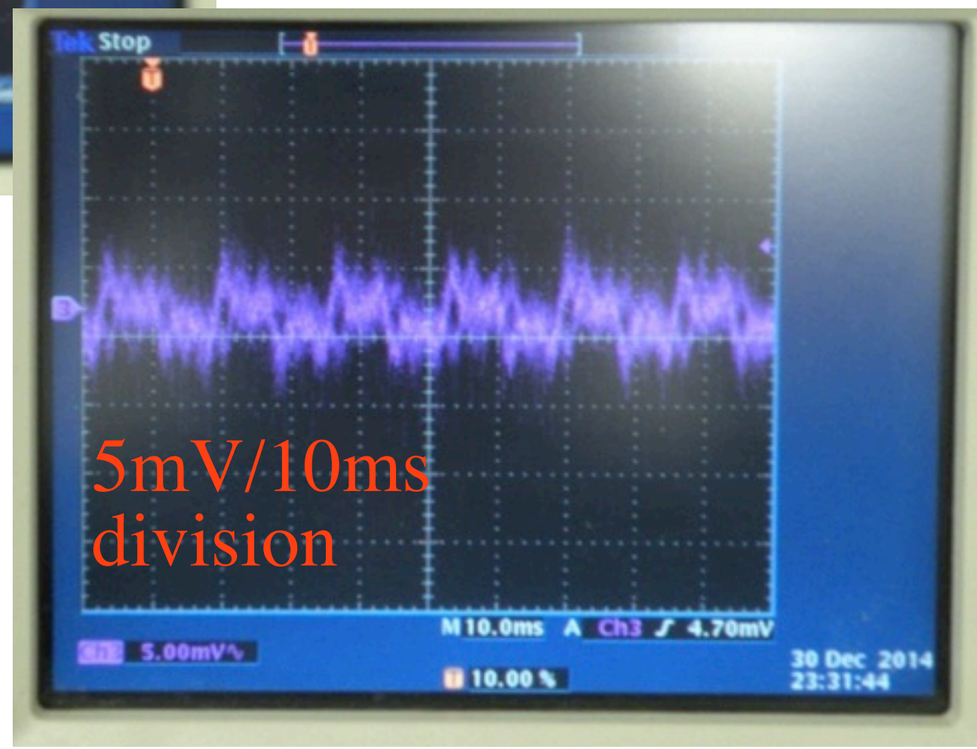
Used to be “bad”!



After Fixing Detector Connection







Used to be “good”!

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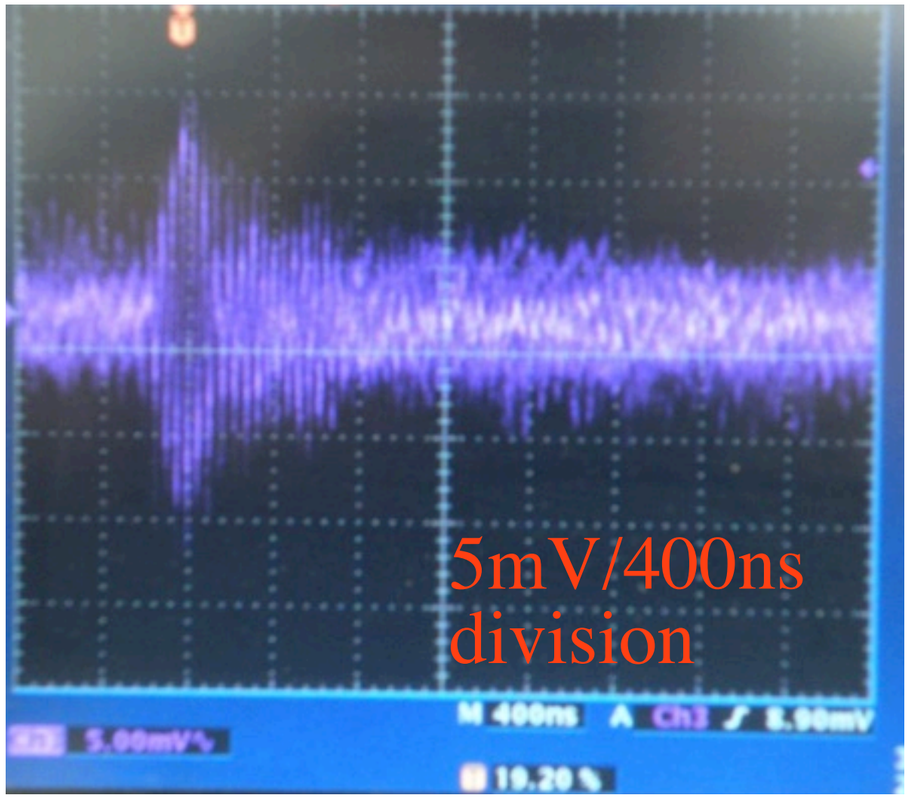
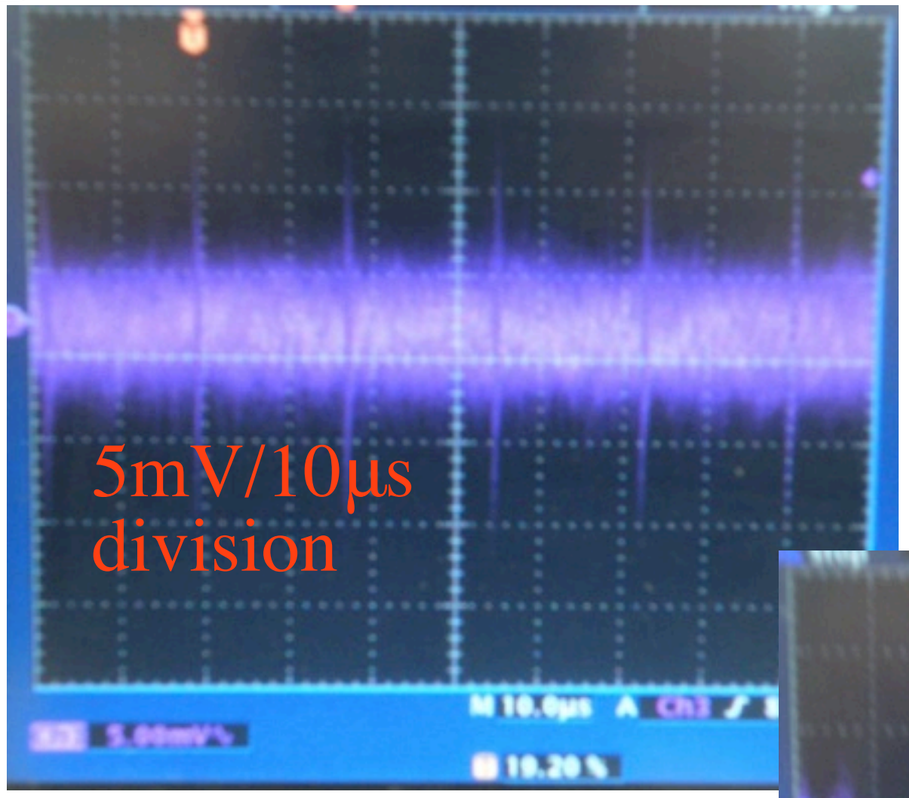
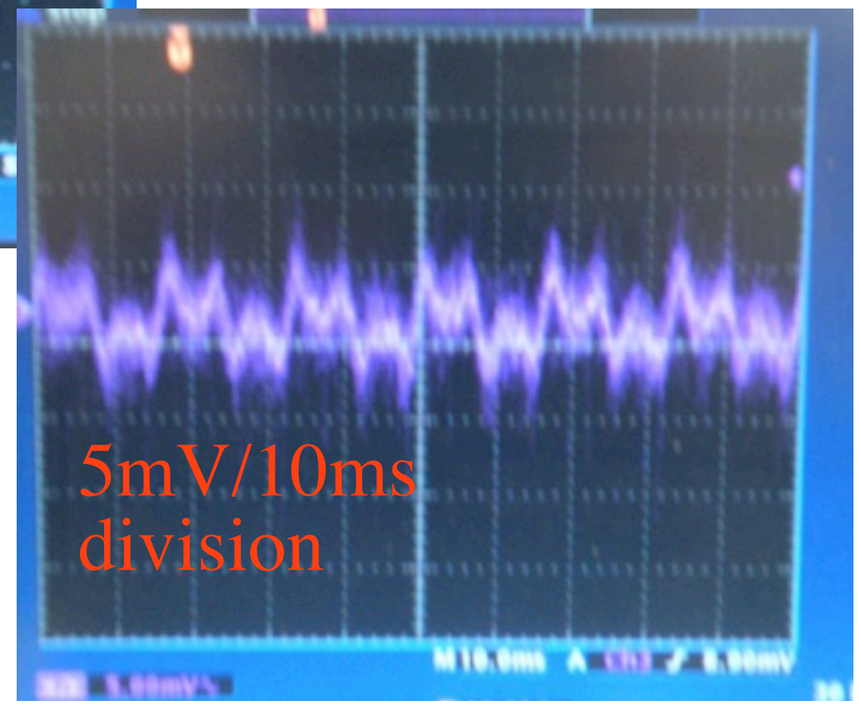
After Fixing Detector Connection







Used to be “bad”!

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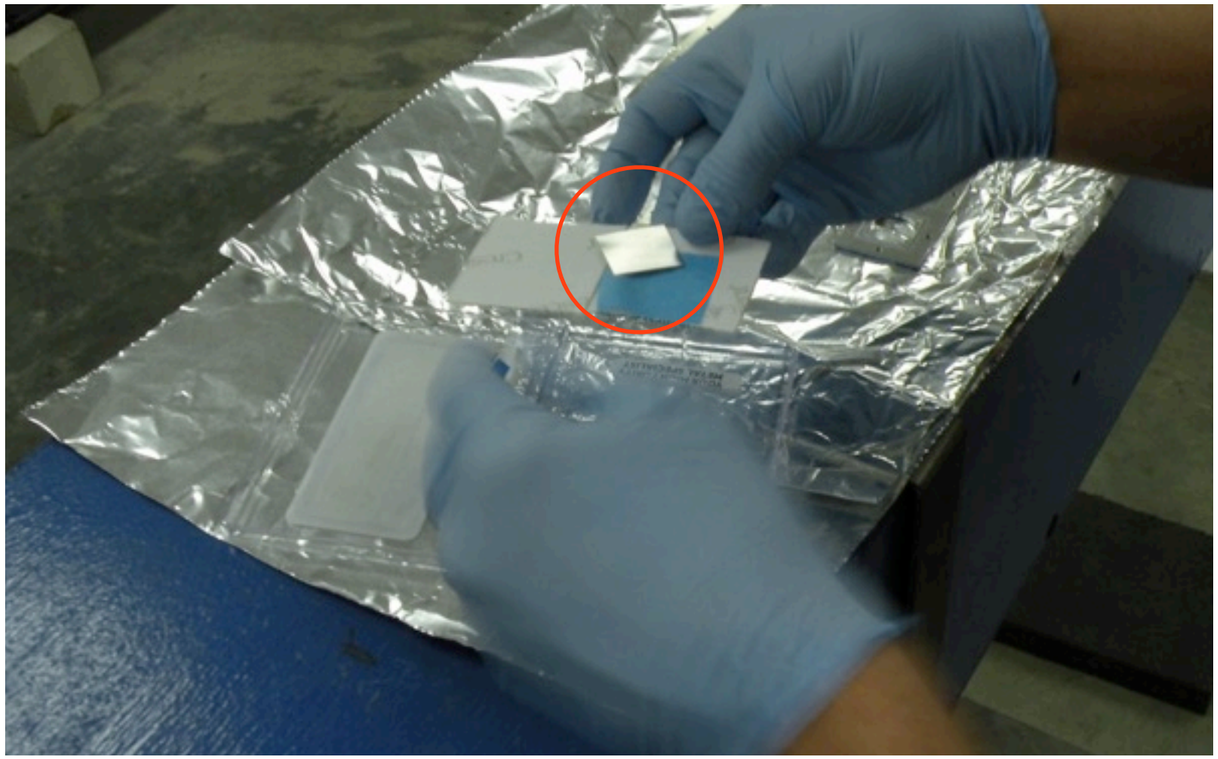
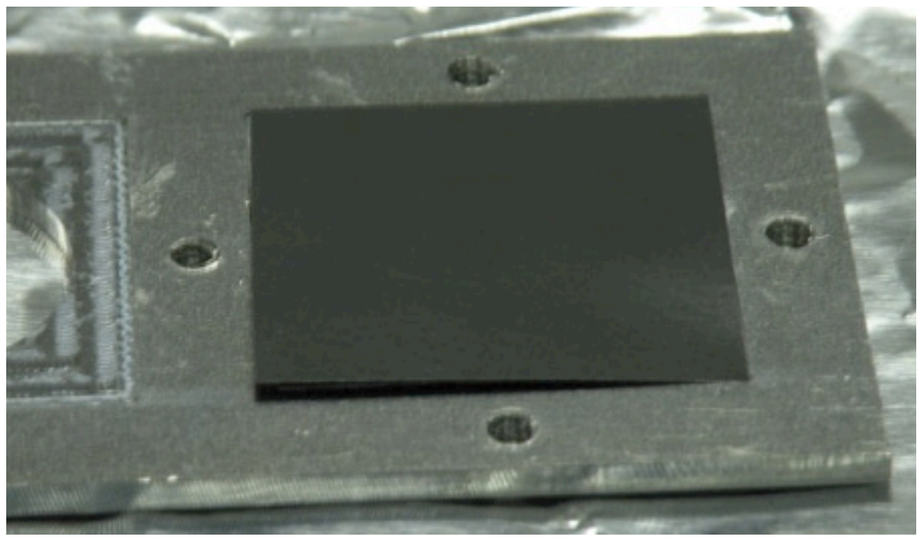
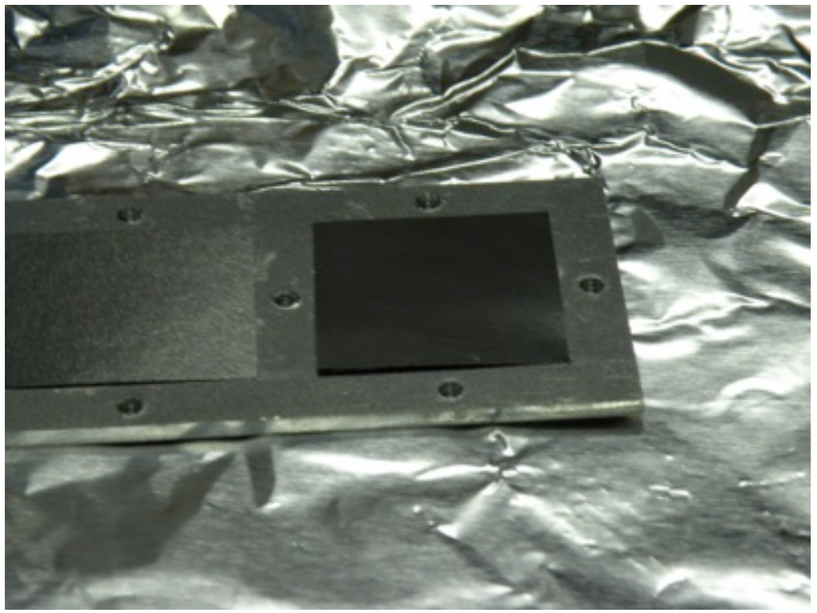
Installing Be Foils

- Due to safety regulations, I was not able to handle the foils
- Mark Stevens had previously had the Be training
- Thanks to Mark and Keith

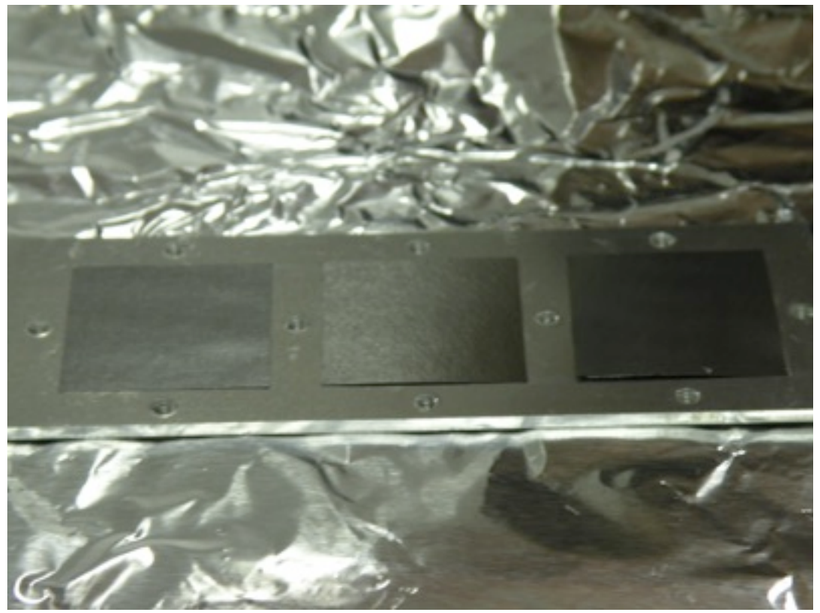




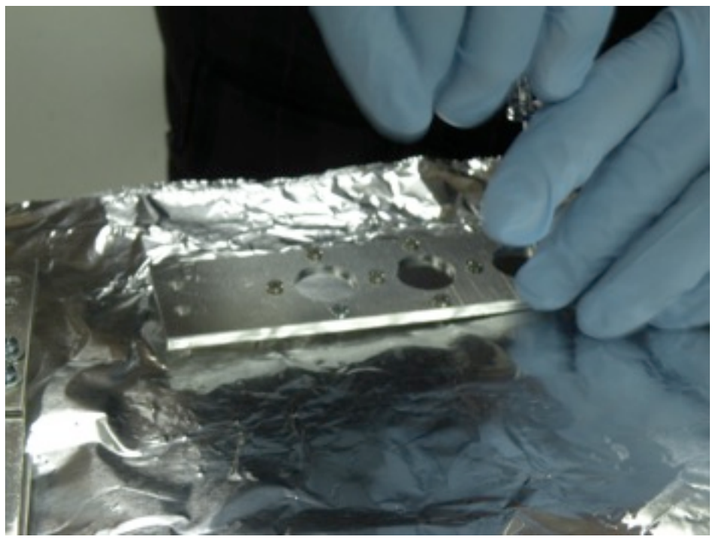
Installing Be Foils



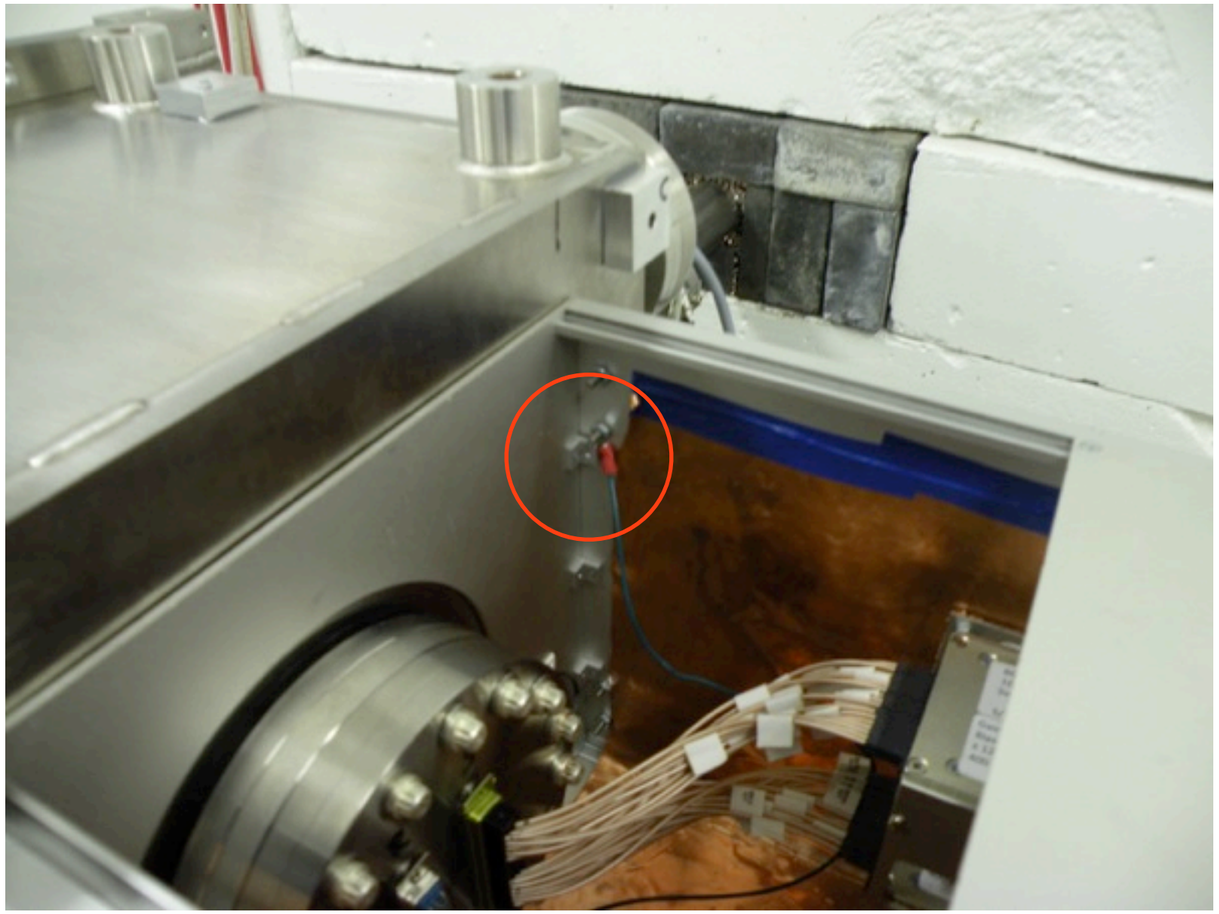
Foil #2 installed

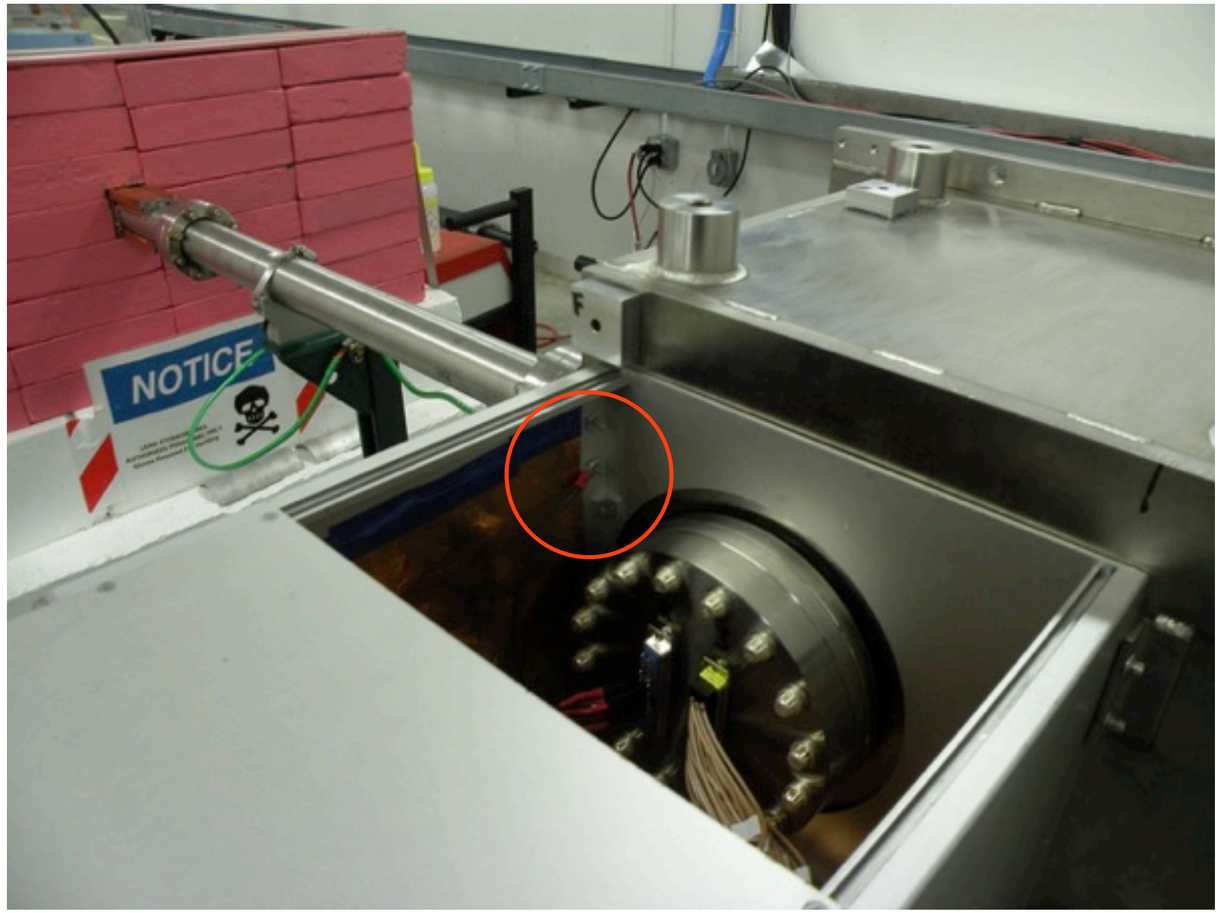


All foils installed



Grounds in Preamp Enclosure





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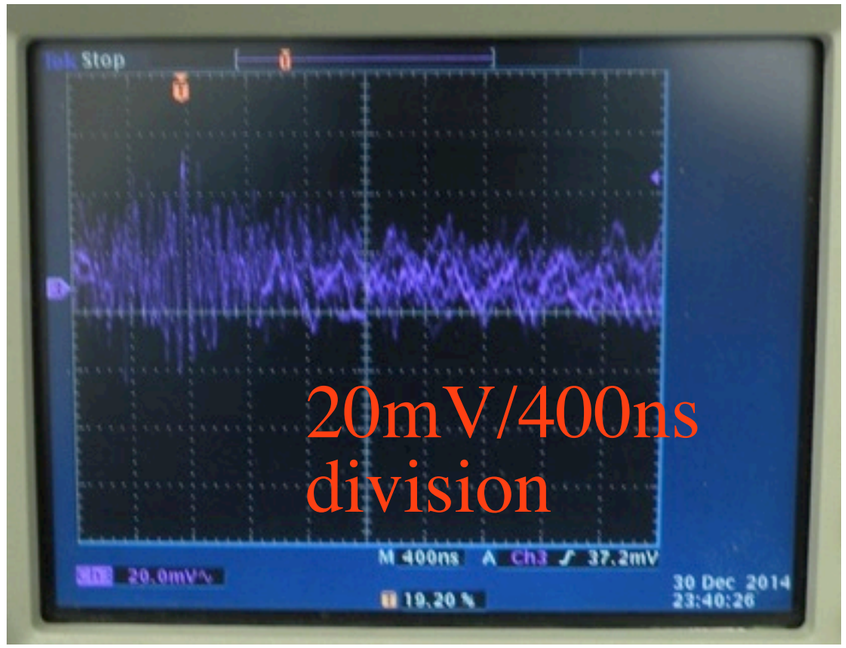
Detector Connection

- Asked Keith to check connection of detector
- Was not tightly fit before, now is
- All channels consistently show similar noise levels



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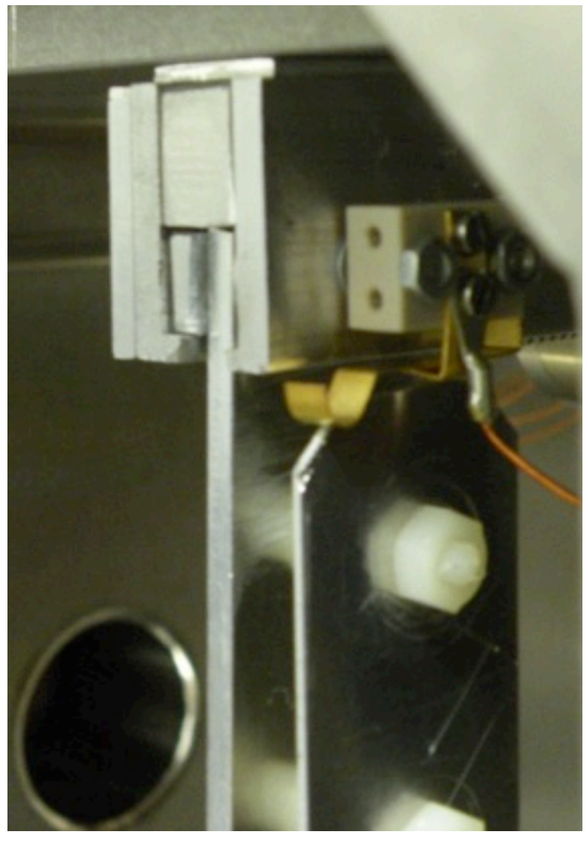
Motor Controller

- Taking out converter tray disables motor controls, need to ask Hovanes to reset
- Controller box is inside hall, next to HV/LV supplies (beneath stair case leading to collimator cave)

Motor Controls

- Had Justin push GUI buttons while I was in collimator cave
- Positions measured with caliper roughly agree with survey results
- No re-survey of converter positions
- Thanks to Nathan, Justin

retracted



position	GUI (mm)	measured (mm)
retracted	0	
1	39.468	39.05
2	71.180	70.91
3	99.96	99.66

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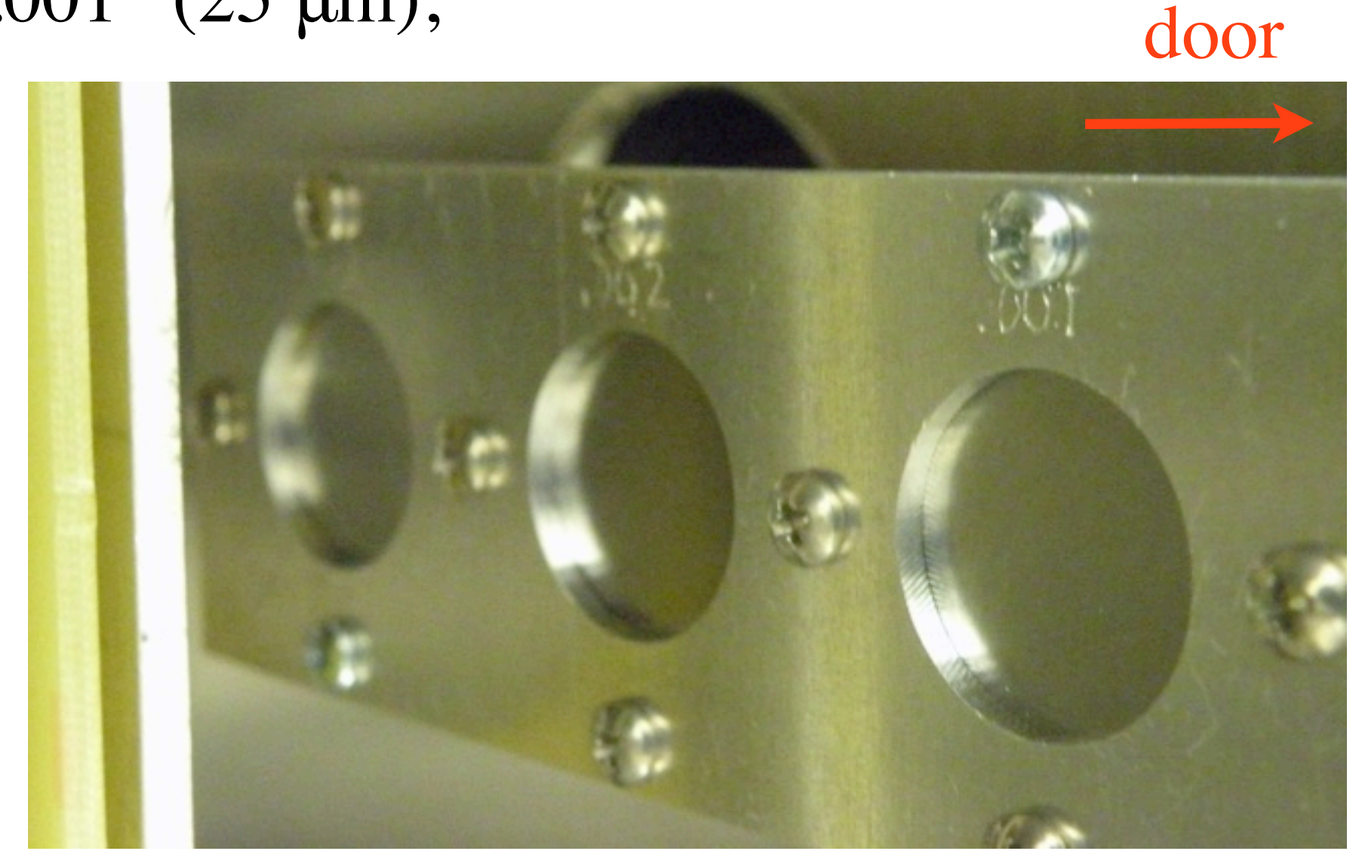
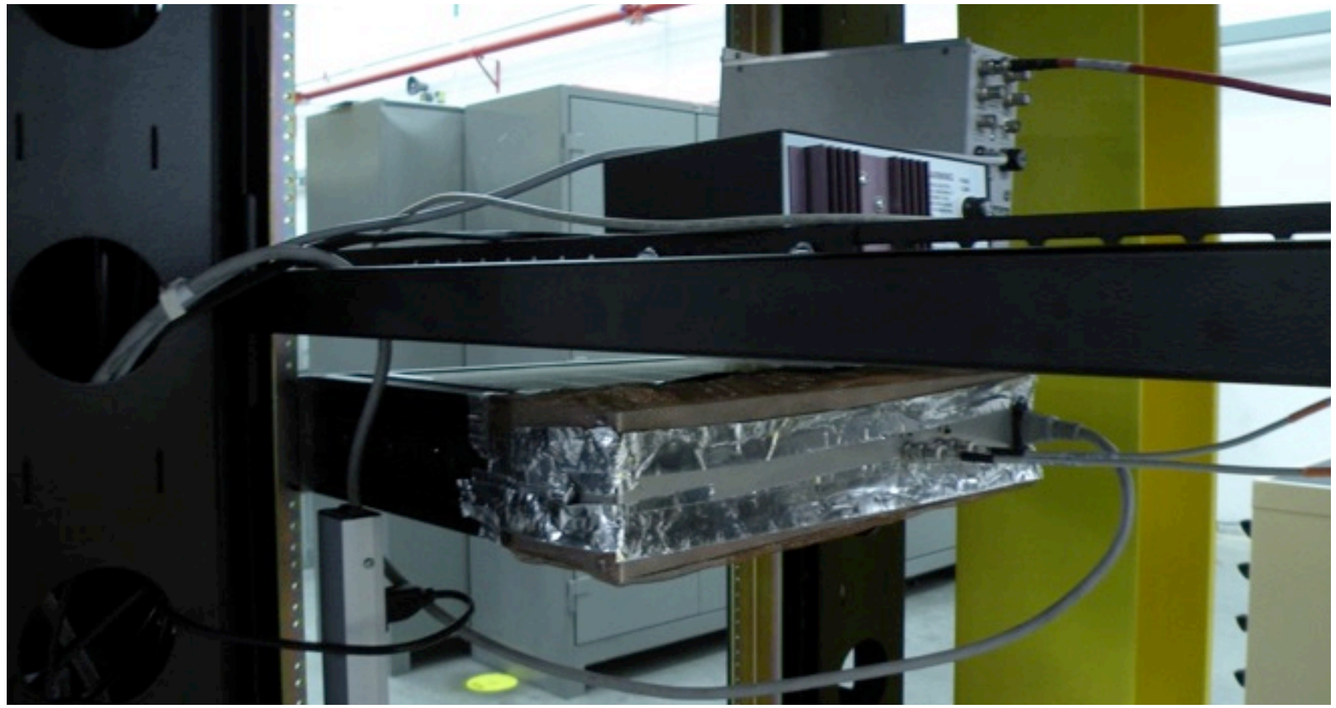
Converter Positions

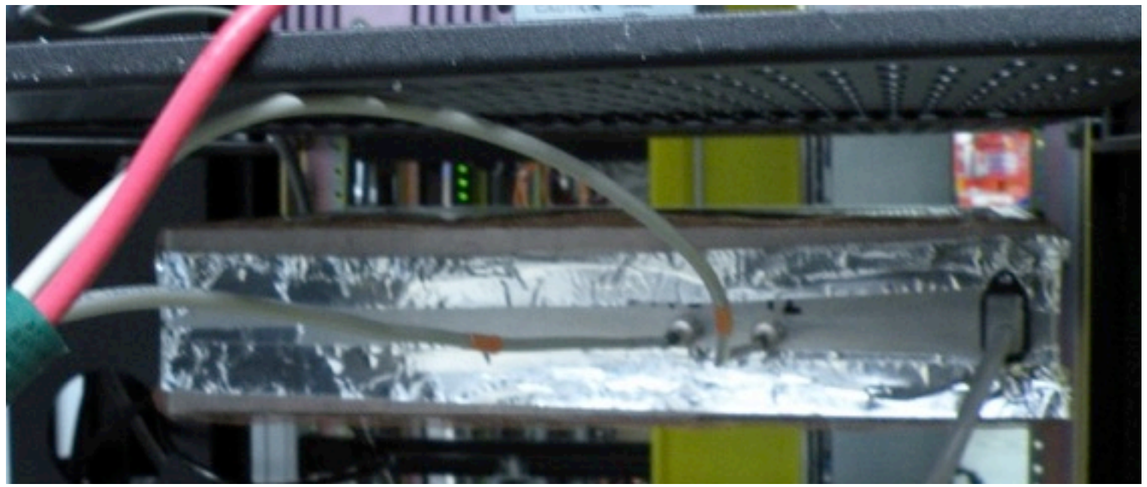
- Mark etched the converter thicknesses onto the converter tray
- Converter closest to door is 0.001” (25 μm), furthest is 0.003” (75 μm)



Copper Mesh on LV Supply

- Copper mesh had been falling off
- Reinforced with Al tape





Near Future

- Ready to close hall tomorrow
- Sasha working on fADCs
- Survey will measure vacuum chamber tomorrow morning
- Anything else?

Looking Further Ahead

- Beam expected on Saturday, run will be 2 weeks + α at most
- We will probably want background rate measurements first:
  - beam quality may not be best possible
  - fast feedback using active collimators will not be in
  - not sure how background rates will change for 12 GeV beam
- When fADCs are working will take data (cosmics, noise?)
- If there are long delays and hall is opened, we can use sources
- Monitoring with scalers, analysis code, simulation of detector/backgrounds

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