UTA: QC Testing Setup Update

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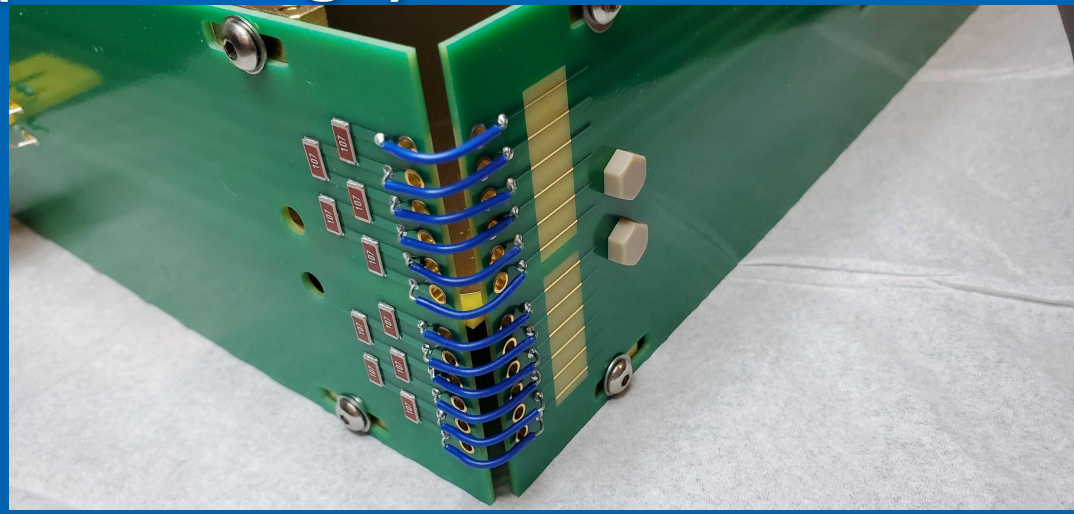
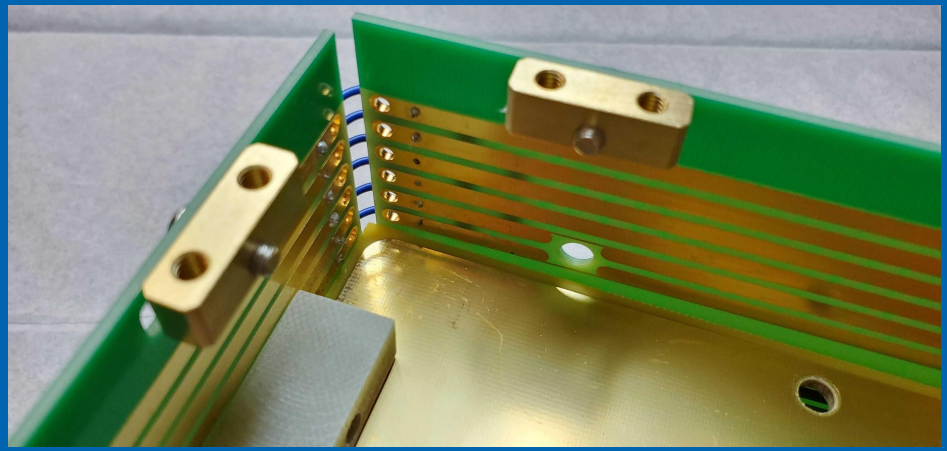
Received QC Test TPC's

- Last week we received the box of QC TPC components and went about the initial assembly (and documentation of assembly)
- By last Friday we had answered all the "which kind of screw do I use here" questions and mechanically assembled all 5 modules (only three shown here) and validated that they fit into our testing rig and can be mechanically supported

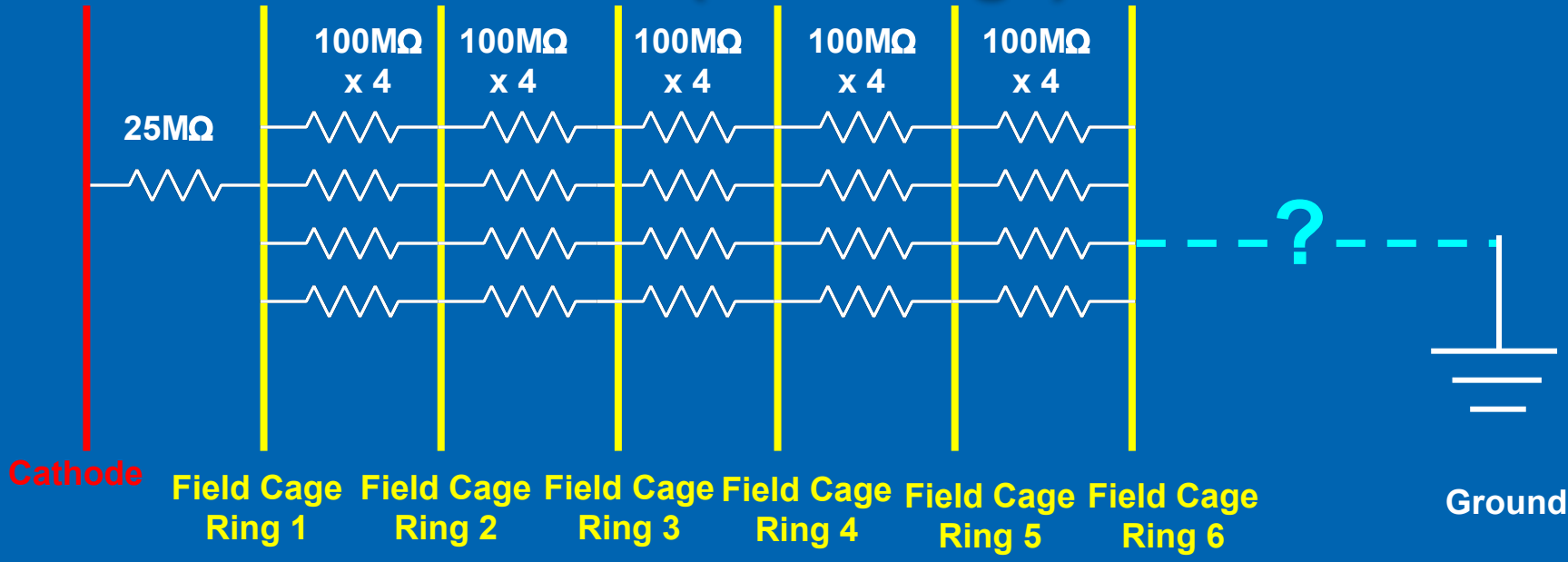
Electrical connections (Field Cage)

- We then moved to getting the TPC's electrically connected
- We started with connecting each of the field cage rings via a soldered wire at the corner
  - Took special care to leave the connection inside the field cage as smooth and un-perturbed as possible
  - Validated that each field cage ring has 25MΩ equivalent resistance



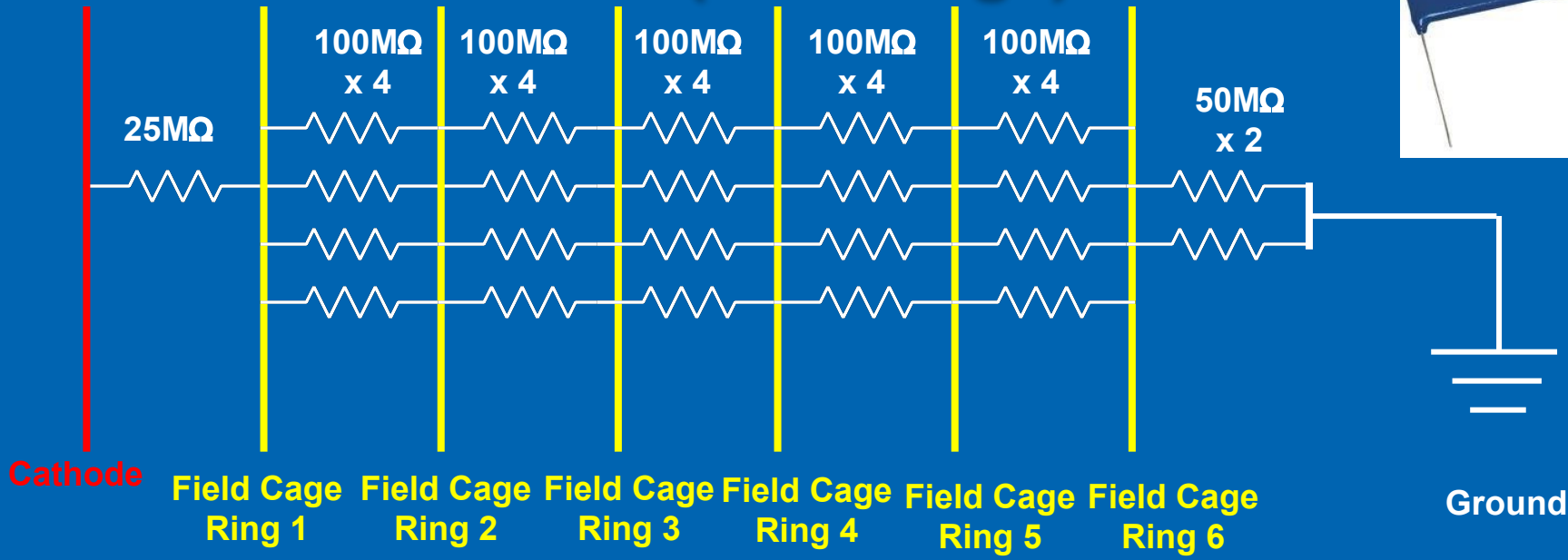


Electrical connections (Field Cage)



- This is a sketch of the electrical setup of one of the QC TPC's
- We weren't 100% sure the intended scheme to connect the last field cage ring and ground...so we made an educated guess informed by the fact that we had high voltage 50MΩ resistors we've used in cyro on hand

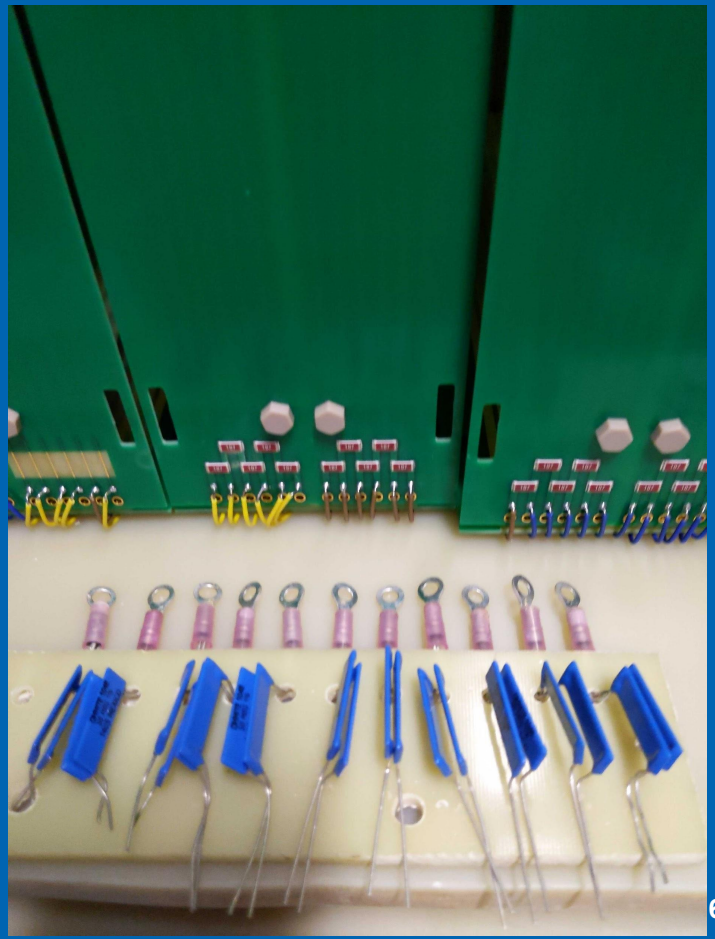
Electrical connections (Field Cage)



- We are going to use two 50MΩ Ohmite thick film resistors mounted externally to the TPC's to provide the last step down to ground and thus leave the last field cage ring at a potential

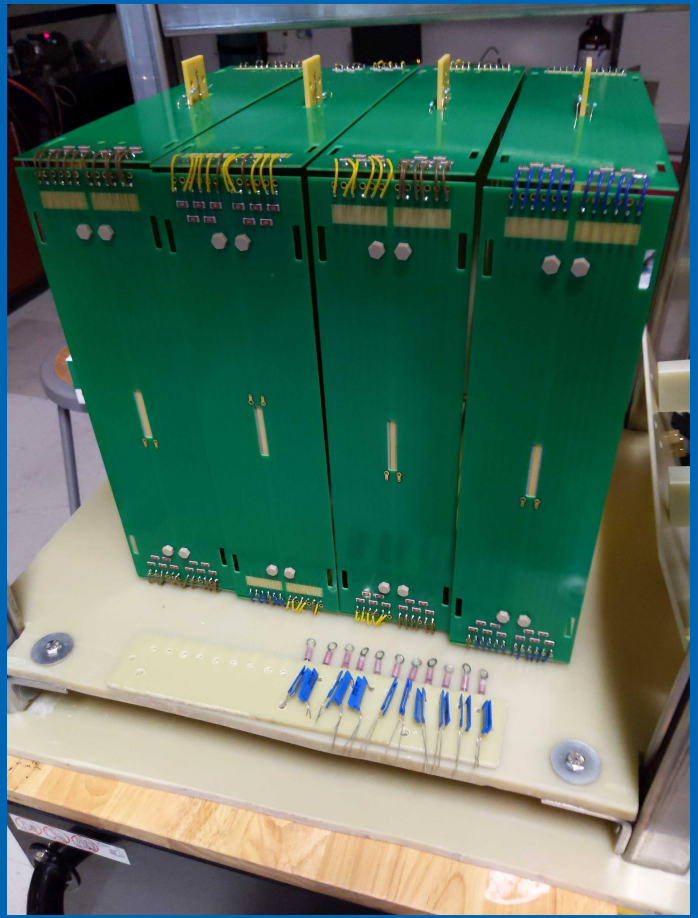
Electrical connections (Field Cage)

- This will be accomplished by having soldered panduit clips with a wire leading from the last field cage ring to a mounted resistor board on the QC Basket.
- This allows us to connect and disconnect the TPC's multiple times as we test different TPC tiles
- Also allows us to have one single common ground line for all the TPC's which we will run to the cryostat lid
- If an alternative connection scheme is preferred, let us know and we can adjust
  - We plan on completing these connections on Monday



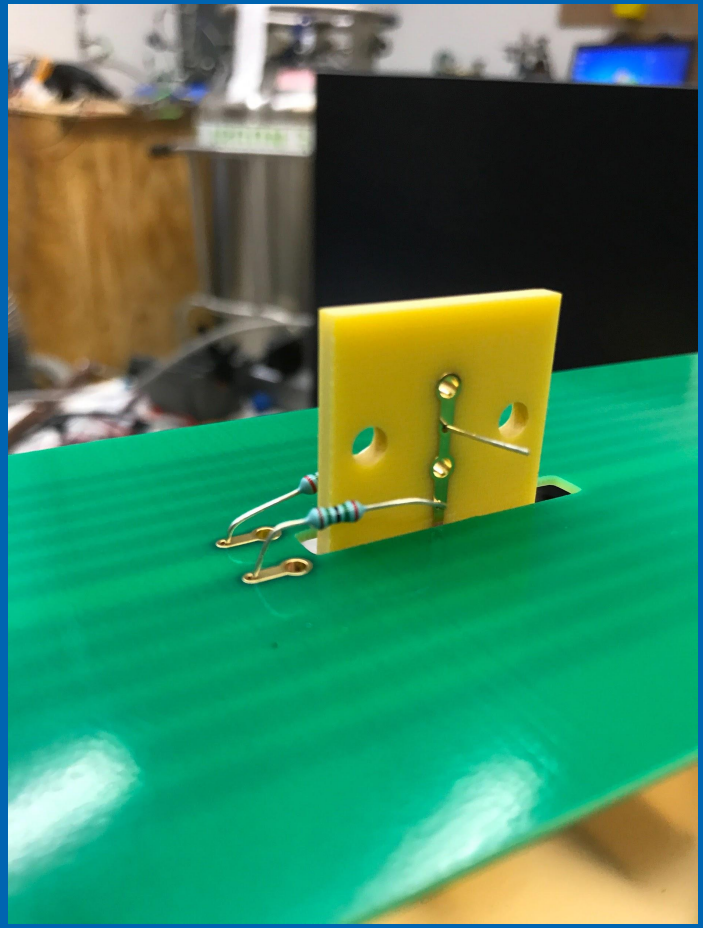
Electrical connections (Field Cage)

- Just a different picture of the setup (with only 4 TPC’s currently in place)
- Resistor board isn’t complete yet, so we have time to go another route if people have a different suggestion



Electrical connections (Cathode)

- We will solder in place the provided resistors between the cathode and the first field cage ring (clipping off the pointy bits and using care when soldering)
- We are still working on how best to run the HV lines and give us a connector that is easy to mount and unmount between tests
  - Likely some combination of panduit clips, washers, screws and nuts….but just taking time to make something robust



New Lab Space!!!!

I managed to convince the university to dedicate (really steal away from someone who wasn't utilizing the space) ~ 500 sq. ft of additional lab space which we have just for pixel testing.

This will really help with making sure we have all our stations setup for receiving a large number of tile boards and having dedicated stations to inspection, warm tests, assembly, cryogenic operations, post testing packaging.

LArPix QC will be the only user of this space through the end of the year!!!