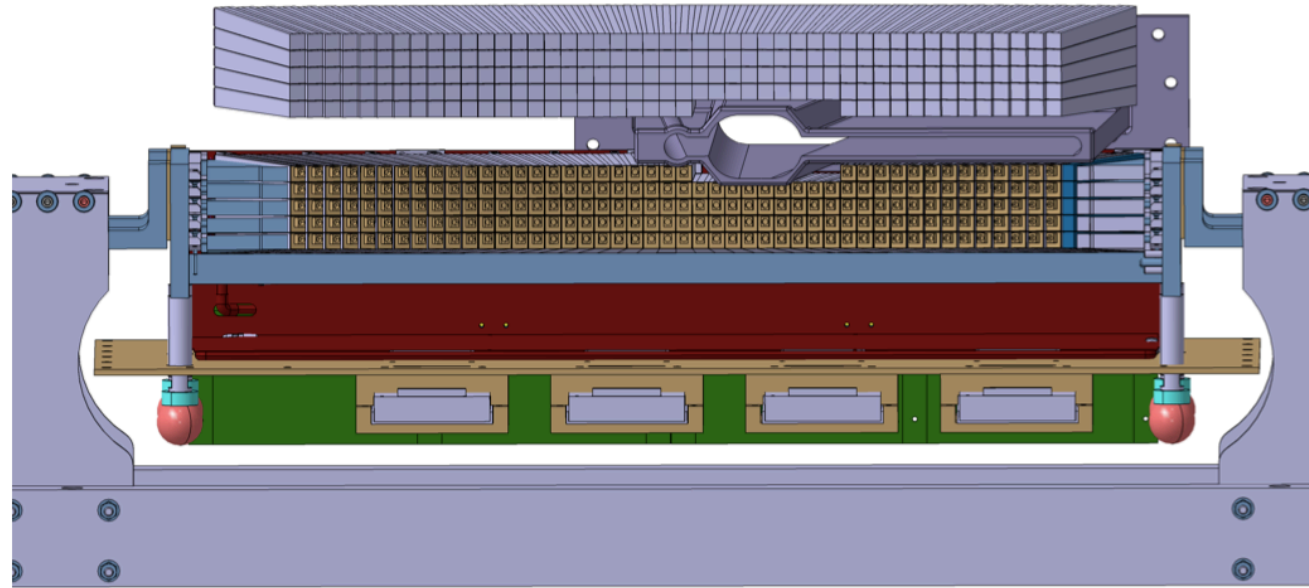


# ECAL Maintenance & Repairs

HPS Collaboration Meeting

May 2020

N. Baltzell



# Single Channels

- Signal cables

- Some connectors had to be resoldered, some came loose during the weeks prior to the 2019 run, exacerbated by physical work in the alcove, and it even happened once during the run
- Replace patch panel connectors with broken latches?
- Reinforce, add stress relief, add traction, at least for loose connectors on the calorimeter (esp. the non-full ones) (there's no latches on the calorimeter)
- Rigorously inspect all connections, resolder any that look suspect, could consider pulling them out for inspection in lab, but that may cause more problems ...

- Preamps

- Probably 3 bad ones, 2 of which went during the run, 1 shortly prior on electron side
- 3 more candidate signal issues, some developed during the run, could be preamps
- We have a ~dozen good, spare preamps, ideally get more

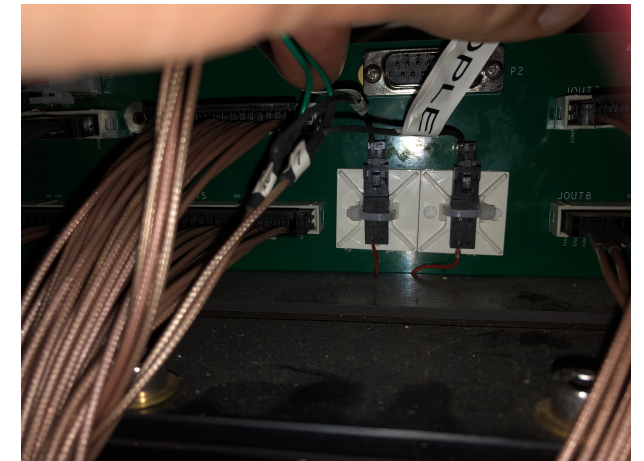
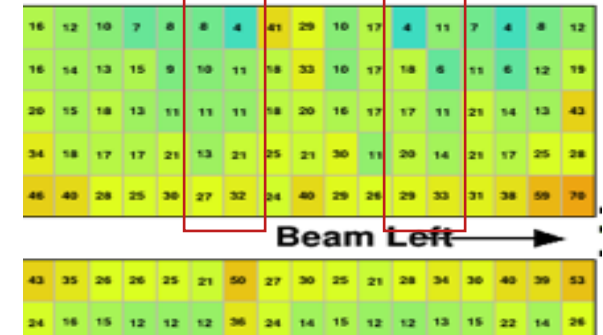
- (-9,2) low amplitude
- (7,-3) low amplitude
- (-7,-2) large amplitude
- (-15,-2) dead
- (5,-2) dead
- (-1,1) dead



# High Voltage

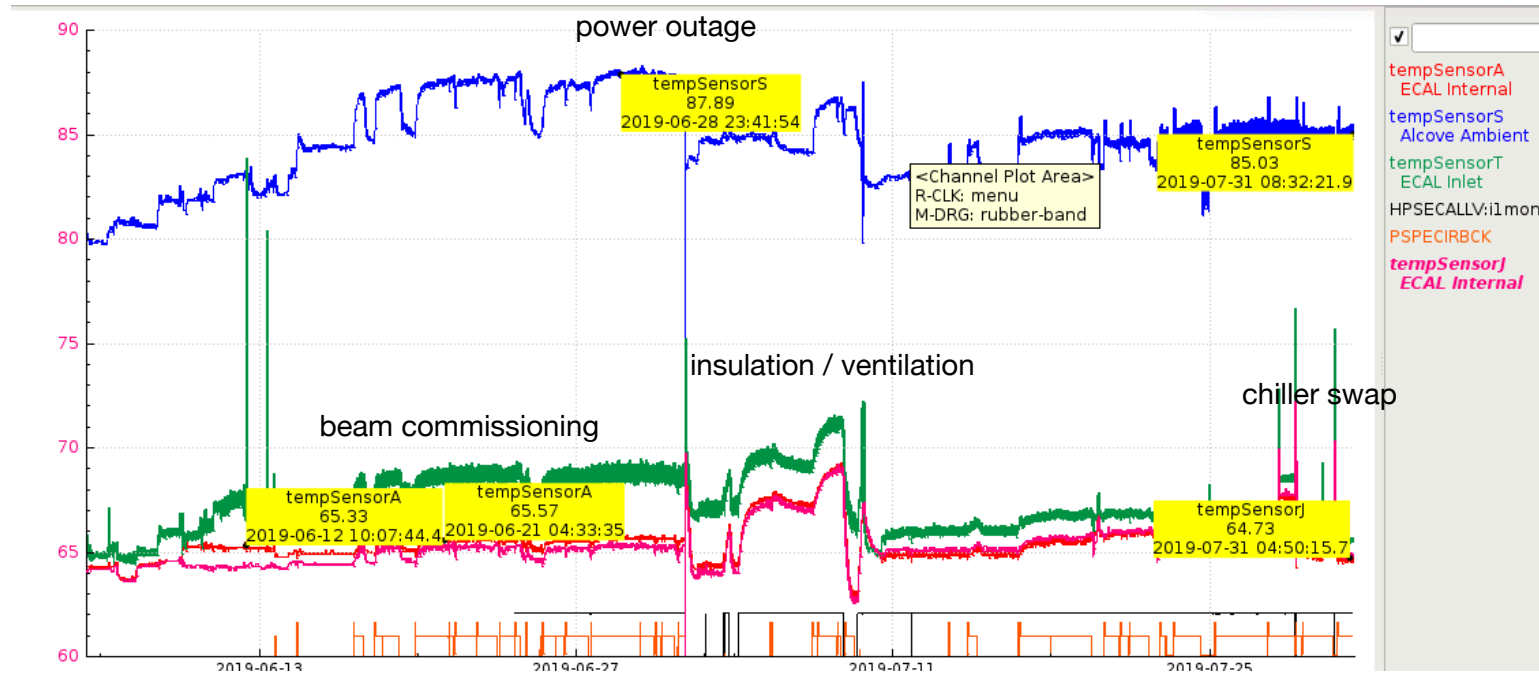
- One HV group's current draw (gains) varied during the 2019 run for a few days
  - possibly due to a single preamp
  - this was a bigger problem during the 2015 engineering run too, before sticker removal on all preamps
- Another HV group was problematic
  - holding voltage for many weeks prior to the 2019 run, and then all of a sudden unable to without tripping
  - it's one of the 2 groups that has motherboard bypass
  - fixed during the beam commissioning phase, didn't really impact the run much, fortunately
    - cut soldered pigtail, switched to terminal block to ease swapping preamps (soldered HV)
    - pulled preamps until finding the culprit and replaced it
  - should we preemptively do the same terminal block "fix" for the other HV group with motherboard bypass?
- They're both on the same half of the same motherboard ....

HV LT7 and LT10



# Cooling

- Chiller issues during the 2019 run, exacerbated by changing alcove environment, led to gain variations in ~20% of the production runs that had to be calibrated out offline
- Maintain the improved insulation and alcove ventilation that was installed during the 2019 run
- Keep a spare chiller on standby (we did have one in 2019, but not immediately accessible)
- Be more judicious on chiller stability requirements and replacement



# Noise

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- We saw increased noise levels in 2019 relative to 2015/2016
- Should try again to track it down ...

*(Unrelated, just a reminder, going to 6 GeV would require switching all FADC boards to 2 V range)*