sPHENIX Commissioning Progress

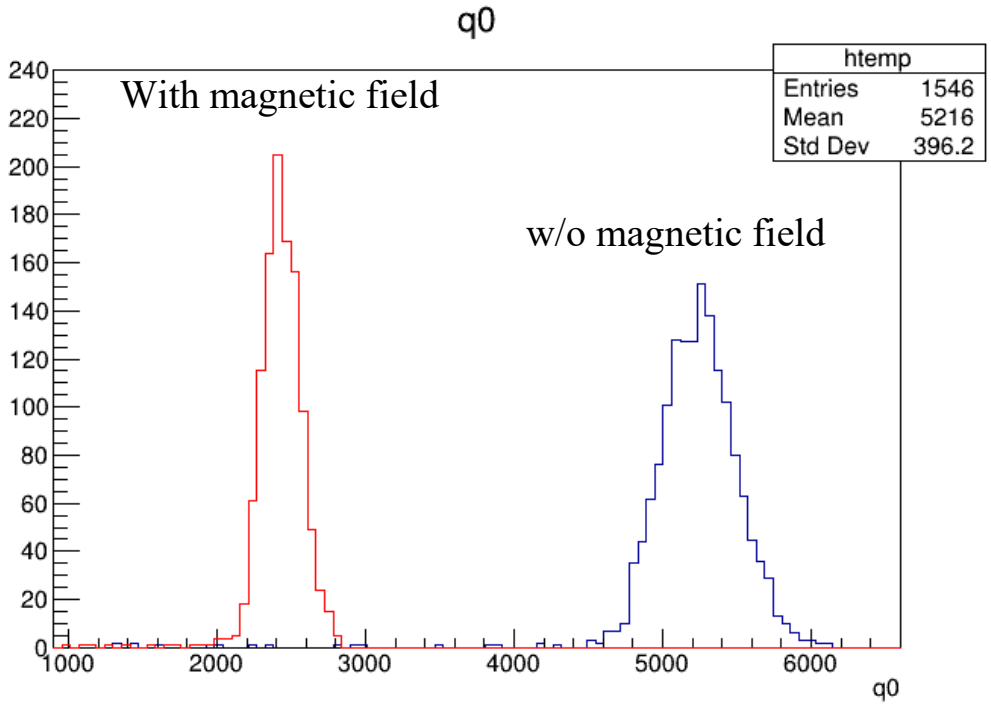
- Magnet has been turned on since Wed. evening (though tripped thrice).
  - Except one broken fuse (capacitor bank) in the power supply, the other three may be due to radiation causing real quench ?! Puzzled …

- Level 1 trigger, MBD, ZDC, HCal, EMCal, TPOT, INTT timed in and taken collision data
- Our DAQ system still haven't figured out to read in MBD and calorimeters reliably.
  - We are working to bring other detectors such as TPC into the global data taking mode.

- We have also set up to use ZDC trigger and its ADC readout.
  - Scaler board for the background counters in the south to be switched on Wed.

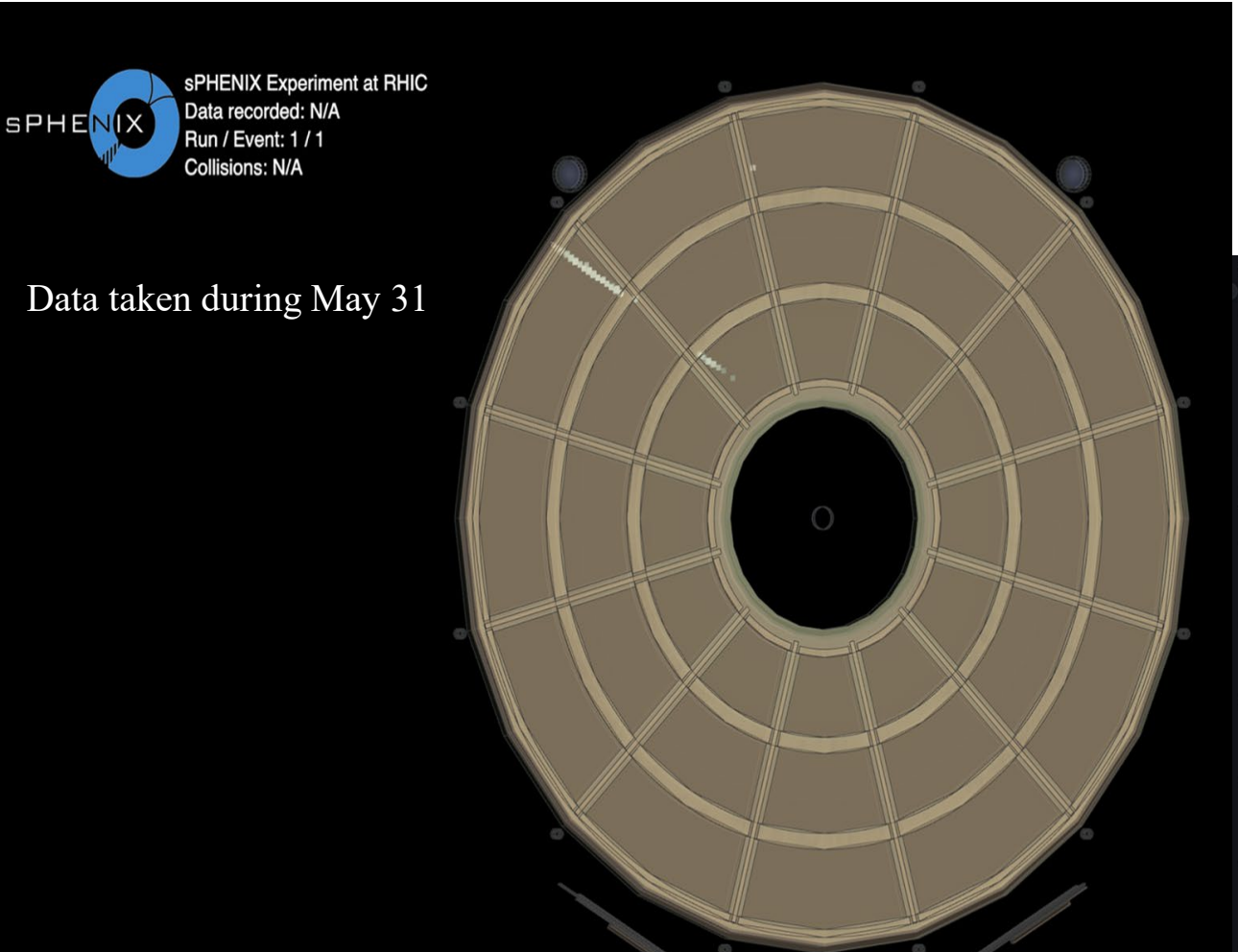
- TPC has cooling problem probably due to leaks and we will open the magnet doors on the coming Wed. to try to investigate and fix if possible.

Confirmed that MBD works in magnetic field



MBD PMT gains with magnet on as expected: ~ factor 2 lower

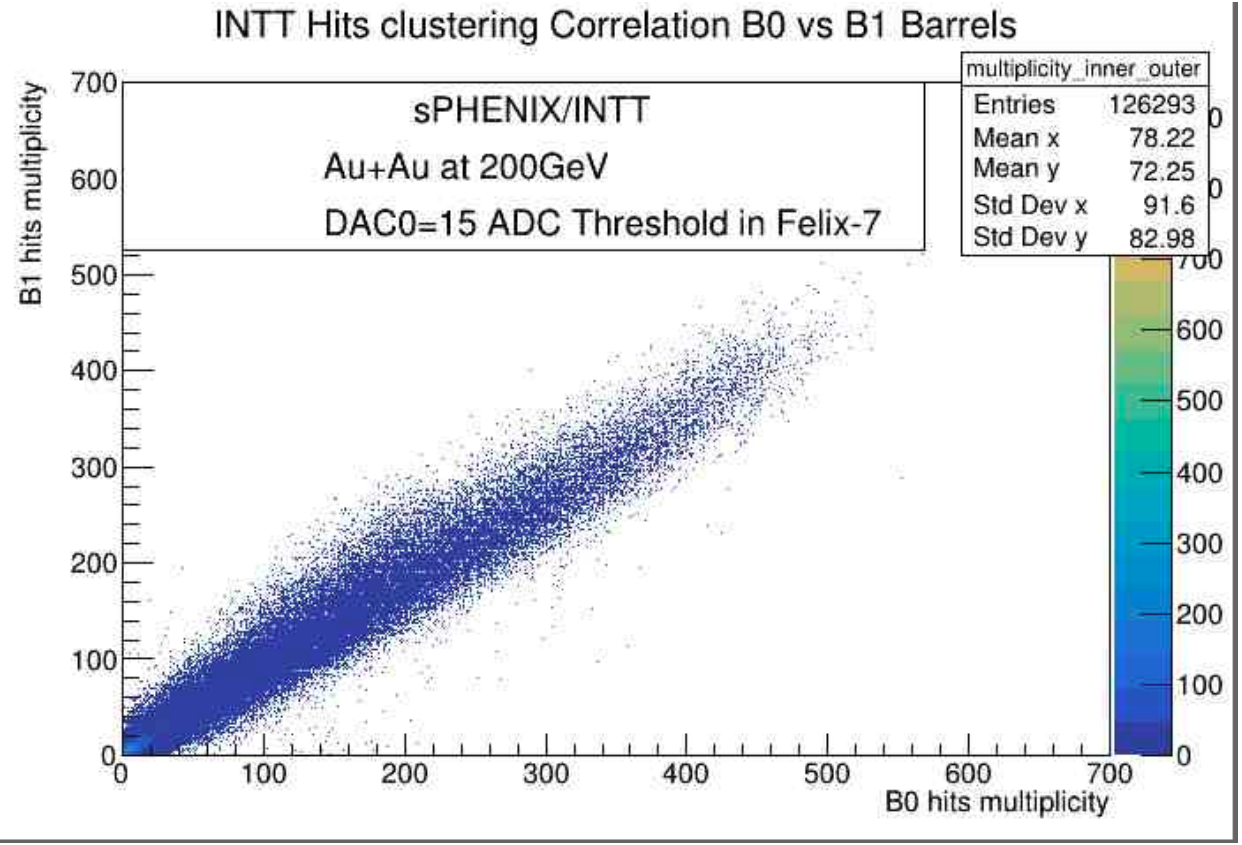
TPC/TPOT Commissioning (track)



TPOT operated with beam and magnet-on

TPC reached operating HV for both central membrane and GEM

INTT Commissioning



A nice plot of hits clustering correlation between the INTT Barrels B1 vs B0 (outer vs inner) from the data taken over the weekend

12 week sPHENIX Commissioning Plan

- 2 weeks of stores with 6-28 bunches @ zero crossing angle (<2 kHz) for initial tune-up of timing and trigger.
  - The magnet doors will be closed and the magnet ramped at the earliest at one end of this period.

- 2 weeks of stores with 111 bunches @ zero crossing angle (1-5 kHz) for optimizing trigger, plus data analysis & diagnosis.
  - The trigger developed in the first two weeks will provide physics triggers for all other detectors

- 1 week of machine studies of optimizing crossing angle.
  - The major goal of this period will be to demonstrate the narrower vertex distribution and reduced rates in the TPC allowed by the crossing angle. The evidence for this will come from the vertex distribution from the trigger and hit distribution in the TPC and the silicon detectors.

- 1 week of 111 bunches @ non-zero crossing angle for calorimeter timing/tune-up.
  - As the luminosity nears the design, the experiment will continue to collect data from as many of the sub-detectors as possible, and the radiation damage to the silicon photomultipliers will be carefully monitored.

- 4 weeks of 111 bunches @ non-zero crossing angle (1-5 kHz) for operating tracking detectors including TPC.
  - This running period is designed to collect data from all detectors which will asymptotically approach physics data at modest rate. Any detectors which are having problems taking data or keeping up with the rate will be debugged during this period.

- 2 week of 111 bunches @ non-zero crossing angle with increasing collision rates (15-20 kHz).
  - This period is a dry-run of operation for physics which will develop software and procedure for physics data taking, which immediately follows this period.