

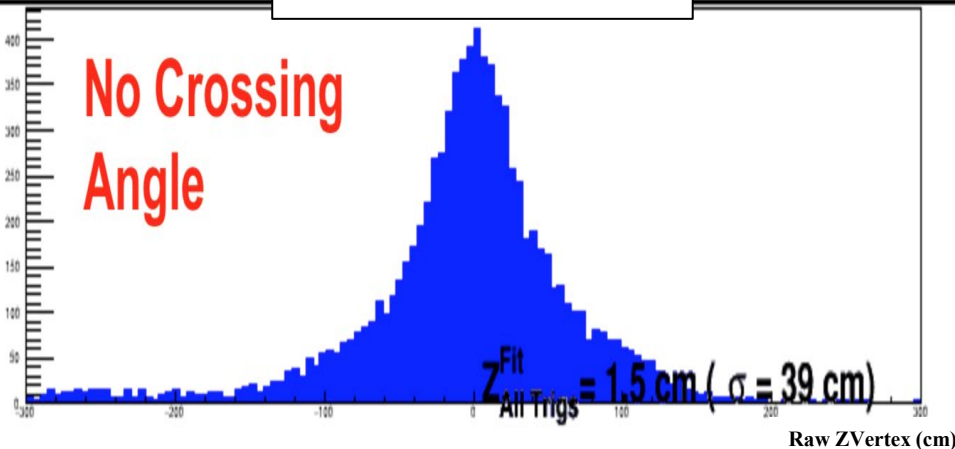
sPHENIX Commissioning Progress

- This week, we have successfully commissioned TPC with collisions and also taken first laser data (with diffuse laser) in TPC.
- We have had stores with crossing angles of 0, 1 and 2 mrad. We observe a narrowing of the vertex distribution with increased crossing angle.
- We are analyzing the collected MVTX data and are working toward higher DAQ rates with the MVTX.
- Efforts continue to improve the calorimeter DAQ.

Beam collisions with crossing-angles :

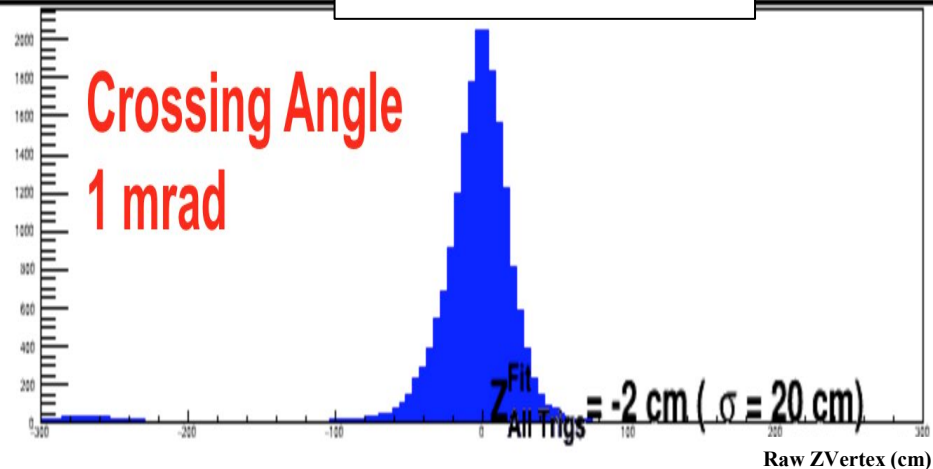
MBD ZVertex (south-north)

No Crossing
Angle

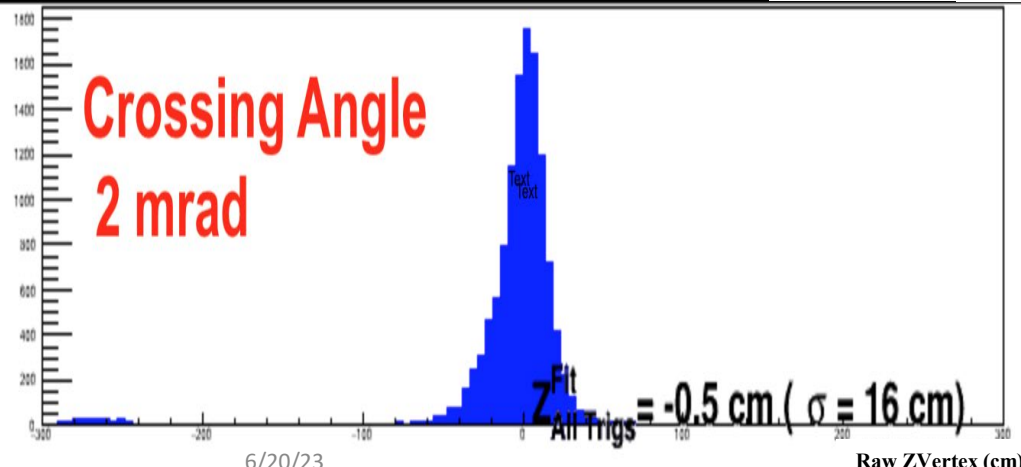


MBD ZVertex (south-north)

Crossing Angle
1 mrad



Crossing Angle
2 mrad



Plots are from our automatic **Online Monitoring system**.

We can see smaller vertices (using MBD) as the crossing-angle increases.

sPHENIX Commissioning Progress

- We'll continue to advance our TPC commissioning with beam, and also TPC HV GEM conditioning without beam.
 - 15% not ramping to full voltage: seek to consult with external experts (ALICE).
- Magnet trips (fast-discharges) may be due to an intermittent cable, and a “Timeout” in the quench-detection software also has given us a lot of confusion.
 - We'll make and replace the cables, and fix/understand the quench-detection issue (now with the additional help of Chris Degen).
 - There is still a chance that a “joint” in the Magnet junction-box is giving us a problem. Resistance measurements will be attempted.

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.