



sPHENIX run plan

Kin Yip (sPHENIX Operations Director)

RHIC Machine/Experiment Meeting



Current status of sPHENIX

- sPHENIX detector construction and installation: done
 - all MIE components, MVTX, INTT, TPOT
 - final sEPD installation scheduled to follow initial commissioning period
- Bldg. 1008 Infrastructure and Facility upgrade: done
- Awaiting approval to operate
 - steps include: IRMC, IRR, ESRC, ORE, and BHSO
 - needed to flow detector operating gas, LHe to begin magnet cooldown















Water, Gas, Cryogenics and Safety systems needed for upcoming RHIC run are complete

TPC bas







Initial timeline



Details of the first weeks of May

	RHIC/C-AD Activities	Main sPHENIX Activities	IR access
Monday, May 1, 2023		SDCC shutdown of Lustre begins; plug door in place	RA
Tuesday, May 2, 2023			RA
Wednesday, May 3, 2023		SDCC Lustre shutdown complete	RA
Thursday, May 4, 2023			RA
Friday, May 5, 2023		Begin run party	RA
Saturday, May 6, 2023			RA
Sunday, May 7, 2023			RA
Monday, May 8, 2023	RHIC 4K cooldown begin	Introduce operating gas to TPC & TPOT/Magnet cool-down	RA
Tuesday, May 9, 2023			RA
Wednesday, May 10, 2023	Beam in blue ring	Sweep IR, close plug door	NA
Thursday, May 11, 2023	Blue injection and instrumentation setup		NA
Friday, May 12, 2023	Blue ramping		NA
Saturday, May 13, 2023	Yellow injection and instrumentation setup		NA
Sunday, May 14, 2023			NA
Monday, May 15, 2023			NA
Tuesday, May 16, 2023	Rebucketing setup (day shift); evening store for experiments	Begin MBD trigger development with beam	NA
Wednesday, May 17, 2023		MBD trigger development	NA
Thursday, May 18, 2023	Solenoid at 4K	IR access	RA/CA
Friday, May 19, 2023		Limited IR access; test ramp of solenoid; sweep	RA/CA
Saturday, May 20, 2023		MBD trigger development with beam	NA
Sunday, May 21, 2023		MBD trigger development with beam	NA
Monday, May 22, 2023		Attempt use of MBD trigger to trigger calorimeters	NA
Tuesday, May 23, 2023			NA

SPHE

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 the 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.

SPHE

FYI

- Pablo Rosas and his team have provided a "quench/interlock" signal from the PLC of the magnet power supply to the RHIC Beam Permit system on the first floor of 1008B (rack 8B04)
 - a "quench" from the magnet aborts the RHIC beam
 - prevents possible damage to MVTX during magnet quenches/fast-discharges Angelika Drees' strong recommendation!
 - can be masked in the future if it's found to be unnecessary