

BRAHMS Status

a brief report

- Commissioning Run Report
- RHIC startup Schedule
- Detectors , DAQ and Infrastructure
- Software
- Brahms startup and shift planning
- Other Collaboration Issues.

RHIC Commissioning

- **BLUE** Beam has been efficiently injected, captured, and stored in the BLUE ring, with lifetimes as long as 45 minutes. Acceleration by a modest amount - about 1 GeV per nucleon - has been demonstrated at a slow ramp rate. The biggest challenge in commissioning the BLUE ring was the need to maneuver the closed orbit around a number of damaged bellows in the beam pipe.
- **YELLOW** Thousands of turns of beam were briefly seen in the YELLOW ring, allowing successful RF capture. Long lifetimes have not yet been established, nor has acceleration been performed.
- Still much to do- nevertheless RHIC was inaugurated on October 4.

Commissioning Run Report

- Machine progress
- Detector Checkout and performance
 - Some good data samples of BB, ZDC and Mult was obtained in a couple of periods.
 - Analysis has been performed on these data.
 - Trigger, DAQ was operational.
- We did **not** establish regular shift operation procedures.

Installation progress

- Detectors ready for installation on BFS
 - DC (T3,T4,T5) assembled in IR. Checkout done on one module in lab. Some modifications needed to electronics
 - H2 arrived pre-assembled from NBI.
 - RICH. Vessel in IR. Mirror checkout has been done in lab. Alignment and checkout to be done in IR. PMT and electronics checkout yet to be done.
- Multiplicity
 - Si-pre amplifier electronics under fabrication.
 - Patch Panels, cabling underway

Installation Progress (II)

- TOFW
 - Stands electronics ready.
 - Slats mounted in modules.
 - PMT checkout and attachment still to go.
- BB, Tiles, H1
 - minor changes, checkout repairs to be done
 - Tiles, additional HV channels
- C1 -ok
- ZDC -some FEH re-cabling
- Shielding installed along T1, T2 on FFS.
 - Heavy-met, Pb respectively.

Installation (III)

- The TPC saga.
 - Before and during commissioning run it was realized that T1, MTPC2 have problems holding anode voltage ($\sim 1300\text{V}$)
 - new T1 readout plane was rebuild at NBI and brought to here.
 - Old T1 readout chamber was investigated, and numerous fixes tried, and applied.==> Works stable at 1250V.
- The main concern is to have an operating detector with a good safety margin on Voltage settings, and understand what to do in case problems develop during run
- Continuing discussion, and readout tests with cosmics
- Gating grid pulsing to be finalized.

Installation Progress (IV)

- The Lecroy HV saga.
 - Have lost communication with L1458 many times, as well as modules-most likely due to power spikes.
 - Lecroy is putting some effort into modifying firmware, so at minimum some diagnostics is available
 - Will add surge protectors (1-phase 220V) to Mainframe(s).
- Supports several crucial detectors
 - TPC's all voltages.
 - Mult-si detectors
 - DC
- Consider having a backup plan.
 - External HV for some crucial channels (anode, drift).
 - Move others to 1440, 4032 MF.

Installation Progress (V)

- DAQ
 - Worked well with FB, camac during run
 - TPC readout added since.
 - Some current problems, due to VxWorks update
 - Trigger, runinfo integration
- Trigger
 - Level0 setup ok during commissioning run
 - Layout re-organized
 - LV1 system to be added.

Work to be done infrastructure

- Complete AC-Power to BFS
- D3,D4 Magnet hookup (water, power)
- Supporting platform for DC
- DC gas system installation
- Survey, and H2, RICH installation
- Safety reviews for detectors
- Signal cabling pulling (RICH)

Software

- Main purpose of this weeks work.
- Some of the major points are
 - Settle on data structures
 - Database issues
 - Monitoring, online software
 - Calibration code, (generation and application)
 - Analysis Code, in contract to reconstruction code
 - Data flow and information sharing

RHIC Startup Schedule

- Time schedule
 - Cool-down start Jan 10, complete by early Feb.
 - Power supply testing until Feb 15.
 - Feb 15. Beam tests and injection start.
- Beam conditions, plan
 - Inject 6 bunches each ring. 5×10^{11} inject
 - inject, RF capture, circulate
 - Accelerate, collide at high energy. (I.e. as high as magnets can go $> 50 \text{ AGeV}/c$)
- When might this happen? End March-May.

Brahms Startup

- Detector Operation and preparations.
- Detecting Collisions
- Bringing Detectors Online

Detector Operation and preparations. (I)

- The status of the detector particular readiness for close-up of the IR,
 - what checkout procedures has been performed,
 - surveys done (if not your own measurements of initial geometry),
 - items that has not yet been done, your plans for completing this
 - resources needed.
- HV requirements and settings : Update , prepare a list of nominal operating values for channels, demand (set) values, current and trip limits.
- Document the operating procedures for the detector to be included in an operations book.
 - Turning on/off the detector
 - Operating parameters (HV, signal size, rates, gas flows)
 - Monitoring displays, panels. This last items will clearly have to be developed.
 - Checks that should be done during operations

Detector Operation and preparations. (II)

- Need to checkout as much as possible before close-up and beam-start so problems can be corrected.
- Operate detectors for extended periods.
 - HV on, Gas flow
 - Record data (when possible -cosmic, background , noise, pulser)
 - Get Monitoring Software running.
 - Checkout consistency of channels ...
 - Find and fix problems
- Magnet, and platform control and operation.

Detecting Collisions

- Expected Startup conditions
- RHIC luminosity workgroup
 - Review in January
 - Establishing control signals (Scalers..) to identify signal/background
- Brahms working group
 - Review rates, evaluate triggers, possible coincidence

Bringing systems Online

- Once RHIC starts injecting and circulating beam detector, trigger, and DAQ commissioning should start.
- Establish work plan, shifts, priorities.
 - Get as rapidly as possible to a state where (first) data can be taken with subset of detectors, while commissioning others.e.g. global detectors, MTPC1,- alternate with BFS detectors.
- The RHIC acceleration schedule is of course very uncertain, so this imposes a high degree of flexibility on our part, detailed planning is unlikely to hold.

Collaboration Issues

- Shift manning
 - training, shift leaders
 - commitment from all groups
- Collaboration meeting
 - January (last week proposed)
- Representation at meetings