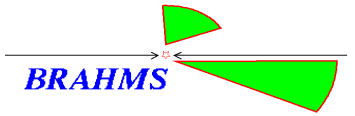
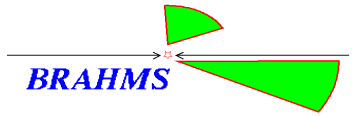


OVERVIEW

- Run Planning
  - Beams, periods
  - RHIC-exp coordination/communication
- Experimental improvements
  - Detector changes
  - Enhancements to increase exp data efficiency
  - Background Issues

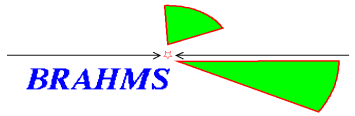
- Only 10 min so this will be brief!



Run Planning

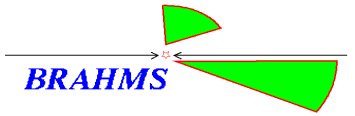
- Au-Au run successful. Achieved ~35% (of revised) goal from RBUP.
- PP run moderately successful
  - Implemented triggers and Inelastic counters
  - Review of data taken has revealed several problems related to triggering and beam conditions (particular early running).
- Experiment requests for future runs (FY03, FY04) as assessed now.
  - Based on last RBUP and some collaboration discussions in January.
- Priority I
  - Additional running for Au-Au at 200 GeV. Collect ~ 200 ?b^{-1} in +-20 cm vertex region. (Run 2 accumulated ~ 30 ?b^{-1}

Run Planning



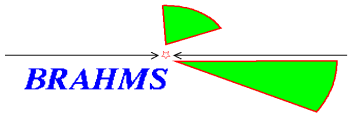
- **Others (not prioritized at this point)**
  - Light Ion (Si-Si) at 200 GeV equivalent to ~100 ?b^{-1}
  - D,p Au comparison runs
    - Asymmetric acceptance, Blue(d) projectile fragmentation Yellow(d) target x region.
    - **Brahms may want d in both rings.**
  - Polarized pp (200 GeV) (transverse Polarization) Xf~0.2-0.6
    - **Needs high luminosity and polarization to be feasible**, and then 1-2 weeks.
    - The transverse polarization is of course not the major RHIC emphasis for SPIN.
  - PP at 500 GeV and longitudinal spin not in Brahms program, except for completion (at 200 GeV) of comparison data (that does not require spin).
- Preference is to start with Au-Au at 200 GeV
  - End of last run a good starting point to achieve physics results quickly rather than spending development time on new species.
  - This will also serve as a realistic gauge about combined machine+exp performance under routine operations.

RHIC-exp coordination



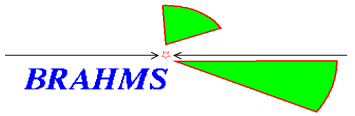
- Long and short term coordination
  - RBUP
  - Short term endeavors (as 20 GeV) that may requires exp modifications should be known/discussed more than a few weeks ahead.
  - Weekly, Daily planning.
    - Overall experimental reqs, and beam experiments,developments should preferentially be known on a weeks schedule planned/known before the time- and Wednesday meeting.
    - Daily changes should be kept to emergencies, or if weekly plans do not pan out.
  - Planning for scheduled weekly access period
    - Benefits: experts can be available
    - May reduce the on spur of a moment requests
- Others
  - Updating of MCR TV, particular in repair, down time periods.
  - Information on beam changes
    - E.g. scrapers/collimators moves in/out
    - Polarizations measurements.
  - Revisit rules for dumping store.
    - Hopefully developing of longer stores and a more efficient cycle between stores will make this less of an issue.
    - Many stores in last runs was kept too long.

Experiment Improvements



- Upgrades to Brahms Detector system will be minor before next RHIC run.
  - Aim to increase reliability of detector systems
    - HV distributions
  - Aim to increase efficiency of data taking
    - Improve trigger sub systems
      - Spectrometer triggers for Au-Au. Pp experience was very useful –
      - Large rejection factors, high efficiency.
      - Improve on Vertex selection (using ZDCs)
    - Can utilize higher luminosity.
- Machine considerations (Increase luminosity and availability)
  - Request **200 MHz** re-bunching for all species and energies.
  - **Zero crossing** angle at 2 o'clock ; does not improve useful luminosity but make conditions (vertex pos) less susceptible to steering changes.
  - **Beta* = 1m** would be of large benefit. Essentially all the last years runs were below band width limit. Preferred over 110 bunches. An increase of L with no increase in background.
  - 100 bunches also add in-time background (BFS arrival time == time for next bunch tunnel background.

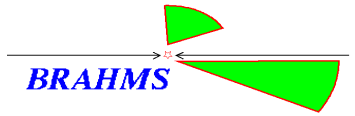
Trigger and data Rates



Time in store	Vertex trigger Rate	Event Rate
0-1	51/sec	94
1 h-2.5	31	60
2.5-	17	34

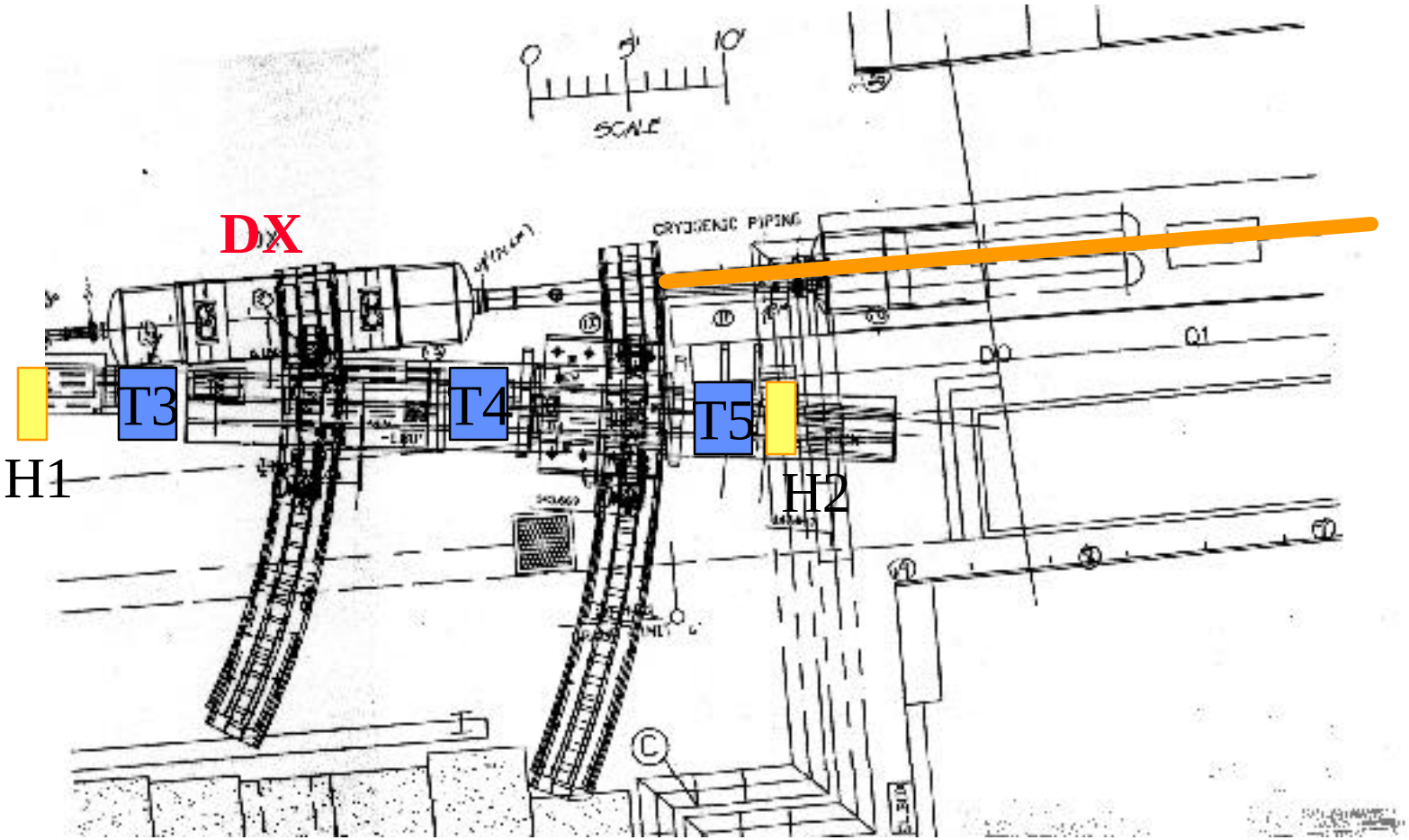
An example of a high luminosity store.
Initial ZDC rate ~ 1300/sec.
Brahms event rate limit ~ 120/sec.
Obvious benefit to maximize luminosity. The time to perform a given Physics reduced by 1.6-2.

Background issue.

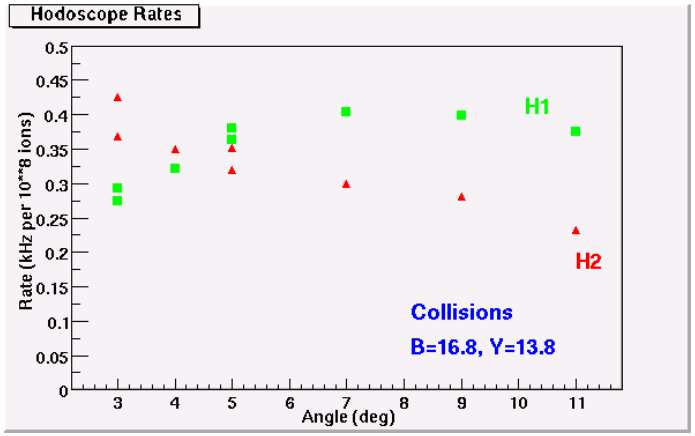


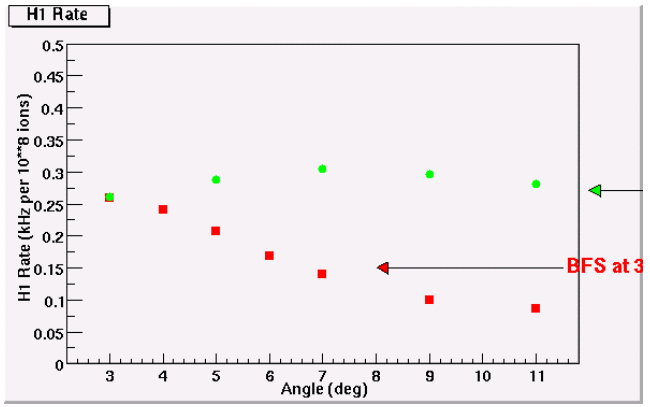
- The background rate in spectrometer hodoscopes and currents in Drift Chambers was much higher than anticipated based on collision rates.
- Measurements were done to identify this problem and source.
- The relevant part of the 2 o'clock and Brahms layout is shown in next slide.
- Note DC and hodoscopes H1, H2.
  - Studied rates vs. spectrometer angles. (see subsequent slides).
  - Rates for H1 increases as moves away from beam
  - H2 rates falls off much approximately as 1/r
  - Rates are dominated by non-collisions rates
  - Consistent with extended source along beam components
    - Shadowed by BFS magnets for FFS.
  - A dosimeter measurement was done; installed for a few day sets along the beam line, DX and D0 towards 3 o'clock.

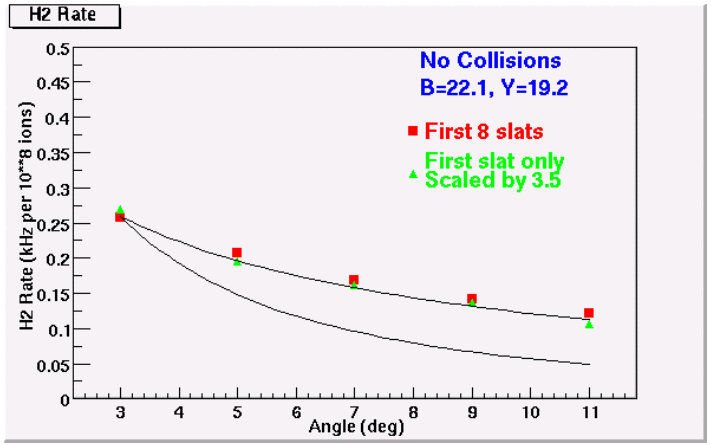
Brahms IR (Back FS)

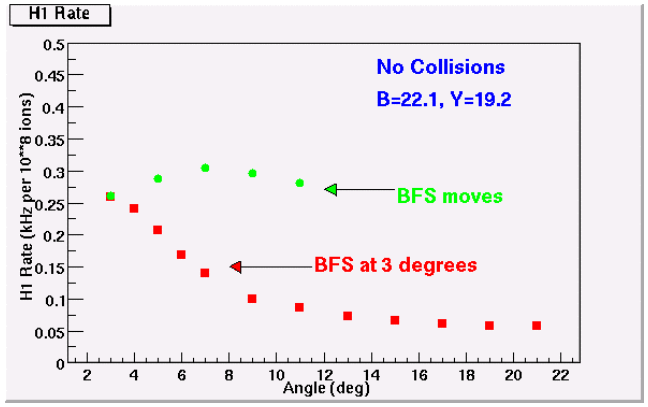


Beam Background Info









Dosimetry results

Even though this is integrated over many fills and stores,
It points to a significant loss,source near Q2, also during stores. This is qualitatively in agreement with rate measurements

Q: Are there machine improvements, or operating modes than can improve on this. What diagnostics are needed?
Brahms is actively pursuing options for installing shielding for detectors (attached, permanent)