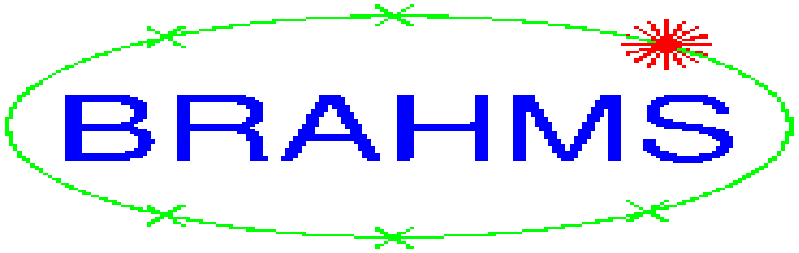
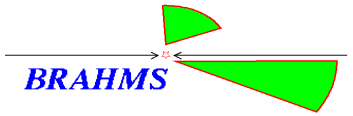


Overview and Status of BRAHMS
January 28, 2002

F.Videbœk

Physics Department

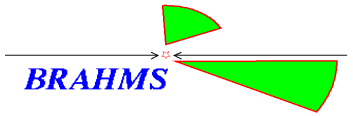
Brookhaven National Laboratory



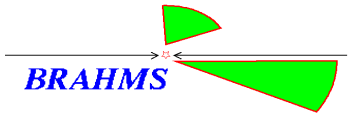
Overview

- Practical comment
- Objectives of meeting
- Overview of 2001/2002 AuAu and pp run
- Planning for Shutdown period
  - Repairs
  - Upgrades
  - New initiatives
- Run for Fy2003 and future runs.
- Analysis, papers and meetings.

Practical comments



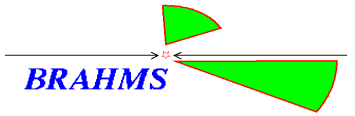
- Meeting will be in 3-192 except for this morning
  - This is last time (apparently) BSA will support coffee+. Next time will have to ask for a small registration fee. [Diminishing fringe benefits at BNL]
- RHIC end of run party Tuesday at 4.00 CA-D
  - Please pay me/Dana (students, postdoc free - $15 all others)
- Collaboration Dinner (tonight or Wednesday)
- Request all electronic prepared (or parts thereof) be placed on the Brahms webpage of rcf /brahms/WWW/private/meetings/Jan2002. Please remember to set permits to **chmod g+w** for all files created.



Objectives

- Lessons learned from Au-Au and pp run.
- Planning for next RHIC Run(s)
  - Improvements
  - Upgrades
- Analysis Status and plans
- Papers, meetings, in particular QM202

Overview of 2001/2002 Run

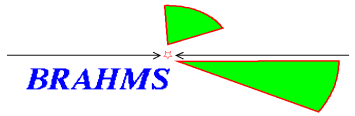


- Goals at start (RBUP)
  - Data taken
  - Data NOT taken
- Experiment issues.
  - Detectors
  - Infra structure
  - Shifts/management
  - Shift manning
- Overall assessment
  - AuAu
  - Pp

Request additional input from you to this assessment.

There may also be items omitted – not intentional

Physics Program



Au-Au

The goals were develop in two RBUPs and under the constraint of RHIC running period I.e. July-January

~150 ?b-1 Consisting of survey data I.e. spectra at many rapidities and high statistics running of selected rapidities (high pt, HBT, clusters) as well as peripheral data.

pp

Survey of comparison data I.e. spectra a moderate pt and in wide rapidity coverage.

Investigation of transverse polarization measurements at large Xf.

(see detail slides)

For the AuAu program we achieved ~30-35% of goal. Most of the survey of central collisions completed. A first attempt to high pt made at y=0 (90) and y~2 (12 deg).

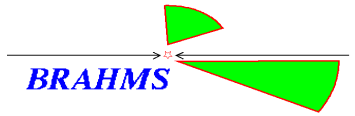
Not enough for high pt, HBT.

Coverage not well for non-central collisions.

Only towards end did RHIC deliver luminosity with the vertex (+-30 cm) that came close to our band-width.

The pp run was quite successful.

Detector Issues



Detectors

TPC : The drift velocity issue came to full light- and during early part fibers were installed around TPM2, after T1 and in front T2. Systematic changes are correlated with measurements in DVM. There are position dependent drift measurements near edges of TPC.

TPC The rebuilt TPM1 readout plane improved response very much. Anode voltages held well on improved other TPCs. Gating grid response brought under control.

DVM : Pickup spurious beam related triggers. Situation improved when some stationed were moved to more shielded positions. There is an unexplained behavior of periods without data but triggers present.

DC : Installed, commissioned in use.

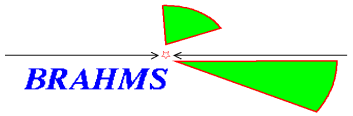
DC : There were several incidences of wire(s) breaking causing considerable downtime of modules. The T5 HV distribution was changed and ensured better modularity. This should be done for T4 and T3, too.

Si : Some Si-detectors have increased leakage and is due for replacement.

WC : Removed due to difficulties with oscillations.

Trigger: The triggers implemented for pp enabled us to achieve the (modest) goal for comparison data.

DAQ, infra structure



HV systems

- Large number of problems with L4032 system. Most in end traced to bad cable, but also an instance of failing MF.
- L1458 system (BFS) failed PS twice!
- Despite improvements in badtrip, and to some extent brahvo is still cumbersome to use, monitor in case of problems.

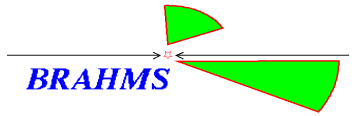
Magnet Control

- The RHIC CDEV system does not give alarms for magnets-
- There was many instances of tripped magnets – not discovered right away resulting in loss of data

DAQ

- Failures on TPC (TPM2) readout ~ 5-6 /hour. Not solved
- HPSS access kept up pretty well, most shortage less than 1-2 hours (spool disk)
- Lost data for ~12 hours due to network (change) and pii3 breakage. DAQ not immune to loss of pii3/pii4/pii5 which in principle is possible
- Some needed fixes to scripts and web done thanks to Bergen eng. Students and Hiro.
- Developments needed (but did not happen due to departure of KO)

Shifts, Management



Shifts

During the run we went to 1 person shifts. This is clearly a must, and worked reasonably well, but do pose some problems.

- Leaving shifts for short errands.
- Lack of discussion partners.
- At times experiments is only marginally watched – instead of checking current data – perform own programming, e-mail etc.

Un-even expertise in running and monitoring experiments. Need new guide, better explanation of what to watch out for etc.

Problems with manning shift in some periods – burden fell primarily on local people then. Also issues with having training up to date.

Shift Summary

The data taking period was July 11- January 24 with an ~3.5 week break I.e. 5.5 month.

A total of ~500 Shifts (Shift Leaders) were manned. All except 2*1.5 on Christmas/New year.

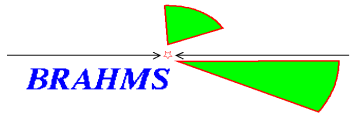
Run Management

Shift allocation.

Interaction with daily and weekly CA-D meeting

Run-coordination and planning

Shift Summary

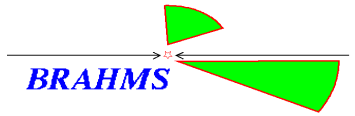


Actual shifts from July 11- January 24; no tracking for startup June 1-July11.

		July	Aug	Sep	Oct	Nov	Dec/Jan	Total	Shift active	Load Sl/S	Load S+Sl
BNL	S	0	1	0	0			1	5	0.20	
BNL	SL	9	10	17	33	5	37	**111**	5	22.20	22.40
Bu	S	16	7	1				24	5	4.80	
Bu	SL	7	20	3	0	0	0	**30**	5	6.00	10.80
JH	S	0	0					0	1	0.00	
JH	SL	4	5	4	4	6	4	**27**	1	27.00	27.00
NYU	S	3	0	1				4	1	4.00	
NYU	SL				4	3	4	**11**	1	11.00	15.00
NBI	S	7	7	13				27	8	3.38	
NBI	SL	9	18	13	17	7	3	**67**	8	8.38	11.75
U.Kansas	S	7	0	0				7	3	2.33	
U.Kansas	SL	7	6	23	3	12	23	**74**	3	24.67	27.00
Bergen	S	1	21	0				22	2	11.00	
Bergen	SL	3	7	7	11	5	0	**33**	2	16.50	27.50
Oslo	S	19	2	0		3		24	4	6.00	
Oslo	SL	9	0	0	0	21	12	**42**	4	10.50	16.50
Krakow	S	2	4	0				6	4	1.50	
Krakow	SL	12	5	2	7	0	8	**34**	4	8.50	10.00
Ires	S	0	0	0	0	0	0	0	1	0.00	
Ires	SL	0	0	0	0	0	0	**0**	1	0.00	0.00
TAMU	S	1	3	3	2			9	4	2.25	
TAMU	SL	10	19	2	16	20	4	**71**	4	17.75	20.00
Total	S	56	45	18	2	3	0	124		3.32	
	SL	70	90	71	95	79	95	**500**	37	**13.47**	**16.80**

Ires Scheduled for ~12 shift on Sept 12+..

Overall assessment

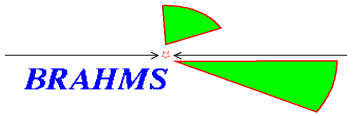


BRAHMS collected a significant amount of data for central AuAu collisions over a wide rapidity range. The main objectives were met in this area.

We certainly lack statistics for peripheral data, as well as for HBT, clusters and high pt.

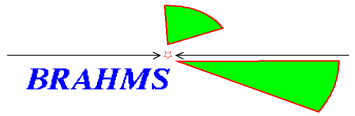
The pp run went well in term of spectrometer data – Normalisations ? Using inelastic counters an issue. The transverse pp study was essentially not done apart from an ~ 1hour rate study.

Planning for next and future Rhic runs



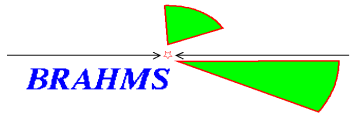
- Repairs and improvements to existing detectors…
- Run Planning for 2003
  - Run most likely to start
    - CAD will like ~ November 2002
    - STAR has requested to T.Kirk ~Jan 2002
  - Length of run period depending on Funding
    - Up to 30 weeks (RHIC request to DOE)
  - RHIC operations review (Feb 5-7) may impact DOE funding to RHIC and set a realistic time scale.
- Upgrades for physics capabilities.
  - Triggers for Light HI, spectrometer triggers peripheral
  - Cherenkov addition- High pt pion/kaon/proton ID.
  - Si reconfig (Flow measurements?)
  - PHOS 16*16 photon detector/ pi0?
  - Si-Drift SDD from ALICE (Torino group); 2-3 segments of two-layer readout. Vertex determination / Hyperons?
  - ForwardMultiplicityDetector components (segmented Si) NBI/ALICE

Run Planning



- Expect RBUP will have to be prepared by ~ August.
- Call for idea's and detail plans in ~May.
- The run period is hopefully settled by then (pres. Budget + DOE guidelines)
- At this point I would expect 16 weeks as likely scenario.
-

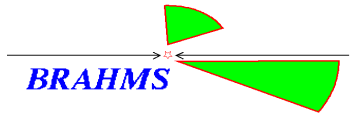
Upgrades Improvement



On the issues of upgrades it is important to outline

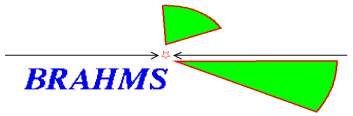
- what do the experiment and physics gain
- what resources comes with it
- what resources,funds are needed to incorporate
- timescale- decisions still to be made

Work to be carried out in the next 9-10 months should commence soon. An overall plan should be set in place.



Upgrades - actions

- Upgrades for physics capabilities.
  - Triggers for Light HI, spectrometer triggers peripheral
  - Cherenkov addition- High pt pion/kaon/proton ID.
  - Si reconfig (Flow measurements?)
  - PHOS 16*16 photon detector/ pi0.
  - Si-Drift SDD from ALICE (Torino group); 2-3 segments of two-layer readout.Vertex determination / Hyperons?
  - Forward Multiplicity Detector components (segmented Si) NBI/ALICE



Repairs, Upgrades

DC

- Look at issues of HV distribution.
- Krakow provide details for planned distribution, incl. Cost, drawings (safety issue) installation issues (ZM)

Trigger

- Counters to enable FS and MRS spectrometer triggers.
- Custom made electronics for hodoscope re-gen+logic ? (FV)

ZDC

- Shuffle modules (improve timing resolution)
- Possible move physical to accommodate pp2pp Roman Pot arrangement. (MJM)

TPC

- Can drift non-uniformities be understood and fixed? (working group)

DAQ

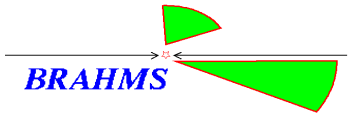
- Increase spool disk space, (memory+speed) sun ~15K
- Decrease single points of failure and ensure backup modes work.
- Working solutions for e.g. HPSS and/or network failures. (DAQ person ?!)

Controls

- Magnet monitoring
- Electronic logs.
- HV controls.

Others

Summary



- The last year has been a most active and productive period
  - bringing the complete experiment on-line
  - Successful AuAu and pp data taking
  - Much analysis progress
  - 2 published journal papers; One close.
- In the next ~ ½ year we must harvest the fruits of this intense effort through analysis, paper writing and presentations.
- Collaboration communication is an essential tool to achieve this.