RHIC Bulletin
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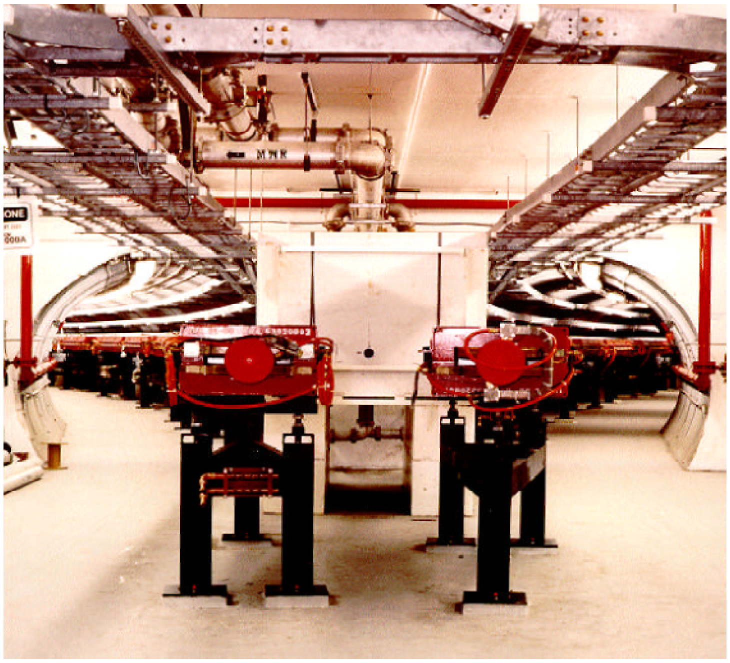
AGS to RHIC Transfer Line: Ready for Initial Beam Test

The AGS To RHIC (ATR) transfer line is the last link in the chain of accelerators and transfer lines that will be used in 1999 and beyond to inject ions into RHIC. Gold ions originate from the Tandem Van de Graaff accelerator located one kilometer south of the RHIC ring, where the ions are accelerated to an energy of 1 MeV/u and then are transported 550 m through the Heavy Ion Transfer Line (HITL). The Booster further accelerates the ions to 72 MeV/u; then the Alternating Gradient Synchrotron (AGS) accelerates them to 10.8 GeV/u. This portion of the journey from tandems to RHIC has been in use for several years for the AGS heavy-ion fixed-target program. The new part is the ATR, which will condition the ions emitted from the AGS and transport them to RHIC for the final stage of acceleration to a top energy of 100 GeV/u.



ATR Initial Beam Test brings ions to this point. Later, the ATR switching magnet will send ions into either the X line (left) and blue (clockwise) ring or the Y line (right) and yellow (counter-clockwise) ring.

The ATR is about 600 m long and comprises several distinct sections of vacuum beam pipe and conventional, room-temperature magnets. Immediately following AGS extraction, the beam undergoes a 4.25° bend to the right to line it up for transport through the first section of the ATR which is called the "U" line. This region was in use a decade ago as part of the AGS neutrino program, but was totally rebuilt for the ATR. Midway through the U-line another bend, 8° to the right and dispersion-free, is made using four combined function dipole magnets connected as a modified triplet (FDDF). The U-line is also equipped with 13 quadrupoles to aid in obtaining the proper beam optics. The bunches of Gold ions accelerated in AGS have a charge state of +77, thus the U-line also houses a stripper foil to remove the last two electrons to produce Au^{+79} for RHIC injection.

Immediately after the U-line is the W-line, which includes both a further dispersion-free 20° bend to the right (eight combined function dipoles in a FODO

Construction began in March for the Wide Angle (or STAR Detector) Assembly Hall -- an 8,200 square foot, five-story structure at 6 o'clock enclosing 500,000 cubic feet. Breaking ground (from left, with shovels) are: Satoshi Ozaki (RHIC Project Head), Jay Marx (STAR Project Director), Nicholas Samios (BNL Director), and Jim Yeck (RHIC Project Manager for DOE). From far left are Thomas Kirk (BNL Associate Director for HEP and NP) and other observers: Mark Sakitt, Jerome Hudis, John Brinker, Michael Schaeffer, Michael Butler, and Douglas Fisher. Construction progress is illustrated in the other two photos. -- Tom Nehring

configuration) and also a vertical level change of about 1.7 m to bring the beam to the proper elevation for RHIC injection. At the end of the W-line, following a group of six quadrupole magnets, the beam encounters a switcher magnet which deflects it either to the right into the Y-line or to the left into the X-line (see photo).

The X- and Y-lines are mirror symmetric, approximately 90° arcs comprised of 31 combined function dipoles, each arc having the same radius as the AGS. Together the two arcs are equivalent to half of the AGS ring although they operate in a DC mode rather than the standard pulsed AGS mode. As the beam exits the 20° bend it must be aligned along the line between the 6 o'clock interaction region and the RHIC ring center in order to ensure the required injection symmetry between the X and Y arcs. The X arc supplies beam to the RHIC Blue (clockwise) ring, while the Y arc feeds the Yellow (counter-clockwise) ring. At the end of each arc there are six matching quadrupoles and a Lambertson magnetic septum which will inject the ions vertically from above into the RHIC lattice. Finally, four high-performance hybrid kicker magnets bring the bunches in each ring into the proper RHIC orbit.

The AGS-To-RHIC transfer line has been under construction since 1991. The AGS extraction region, the U-line and the W-line are entirely complete, are currently undergoing pre-commissioning shakedown and integration, and will be injected with the first RHIC test beams in October. Many scientists, engineers, and technicians have been working feverishly for the last several months to ready the ATR for commissioning. All members of the of the RHIC Injection Group and the Commissioning Team are eagerly awaiting the major RHIC milestone of ATR "first light", which is scheduled on or about October 15, 1995. --Ted Robinson

Community College Students Work with Technical Staff

Four students from Suffolk Community College (SCC) and two faculty advisors participated in the SCC-BNL Faculty/Student Summer Project at RHIC. The principal goal of the project was to test the collaboration of community college students and faculty with BNL projects in ways that benefited both parties (SCC and BNL).

Each student worked side-by-side with the technical staff of one of four RHIC support groups: Vacuum Systems, Cryogenic Systems, Collider Installation, and Control Systems. The faculty advisors "floated" from group to group. The students were effectively integrated into the technical groups and trained ***on the job***. The SCC students experienced life and work in a large scale scientific enterprise, which reinforced their commitment to engineering as a profession. The SCC students and faculty worked with the technical teams and BNL scientific staff, used the research library facility, and attended BNL lectures on new technologies and physics.

The SCC-BNL program rewarded all participants. The students benefitted from a paid professional work experience that introduced them to the technical work place long before they completed their schooling. The academic institution gained faculty enhancement and the potential for future equipment sharing. The research partner advanced several of the RHIC construction chores. The SCC students reported an increased desire to pursue a technical career and all agreed that their summer at RHIC was a very stimulating work experience.

-- Bob Lambiase (RHIC) and Bob Warasila (SCC)

Also In This Issue

RHIC Backgrounds Workshop

Twenty-five participants from the RHIC accelerator and detector groups met at BNL on July 19 to review progress towards understanding the mechanisms that will affect trigger rates, radiation doses, and detector occupancy during the actual running of RHIC experiments. Three major types of background were considered: (1) beam-gas interactions, (2) QED pair production, and (3) intrabeam scattering.

Beam-gas: Interaction rates for beam-gas interactions are calculated using the geometrical cross section of Au ions on the residual gas species in RHIC (assumed to be mostly H_2 and CO). RHIC vacuum specifications are based on the estimated reduction in luminosity lifetime due to beam-gas collisions. In the interaction region (IR), the main consideration is background rates in the detectors. The pumping speeds, outgassing rates and conductances of the machine in the region near the experiments have been modeled. Kimo Welch reported on estimates of the vacuum levels expected and discussed the implications of various bakeout scenarios. The goal is to achieve 10^{-9} torr or better in the IR beamtubes and even better vacuum throughout the ring. With these residual gas levels and a beam intensity of 10^{9} ions/bunch there would be 10^{-4} background interactions/crossing/beam. Paul Kirk presented initial results from simulation studies of background rates in the PHENIX muon arms. This work attempts to follow the hadron cascade from the collisions taking into account the material in the tunnel and the muon identifier.

QED pair production: This process occurs when *almost-colliding* ions *just miss* each other. Based on previously published calculations of inclusive particle spectra by Rhoades-Brown et al., the total cross section for electron pair production in Au-Au collisions is 33 kb (3.3×10^{-20} cm^2).

(Continued on Page 4)

RHIC Magnet Production: CQS Assemblies Follow Dipoles

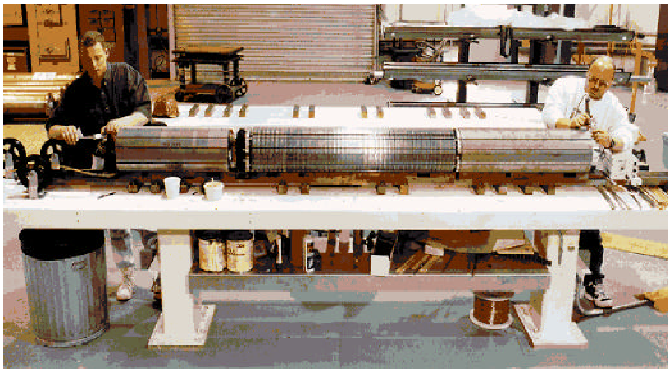
The previous issue of the RHIC Bulletin reported the successful completion of RHIC dipole production Phase I (first thirty). Since then, many more dipoles have been masterfully manufactured by Northrop Grumman. Through August, over half (213/373) of the dipoles were delivered to BNL and tested; spares are included in the totals. The quench plateaus of all dipole magnets continue to generously exceed a 30% operating margin and the magnetic field quality continues to be substantially better than previous achievements in production machine magnets.

Quadrupole magnet cold masses (CM's), also from Northrop Grumman, have had a similarly successful startup. Through August, three-quarters of the full allotment (330/432) have been received at BNL and all have easily met the stringent test requirements for quench performance and field quality (see figures). Meanwhile Everson Electric has completed delivery of all 300 of the Sextupole CM's and all 78 of the Trim Quadrupole CM's. BNL has produced over three-quarters (359/432) of the Corrector CM's, of which some are single-layer dipoles and some are four layer dipole-quadrupole-octupole-decapole CM's.

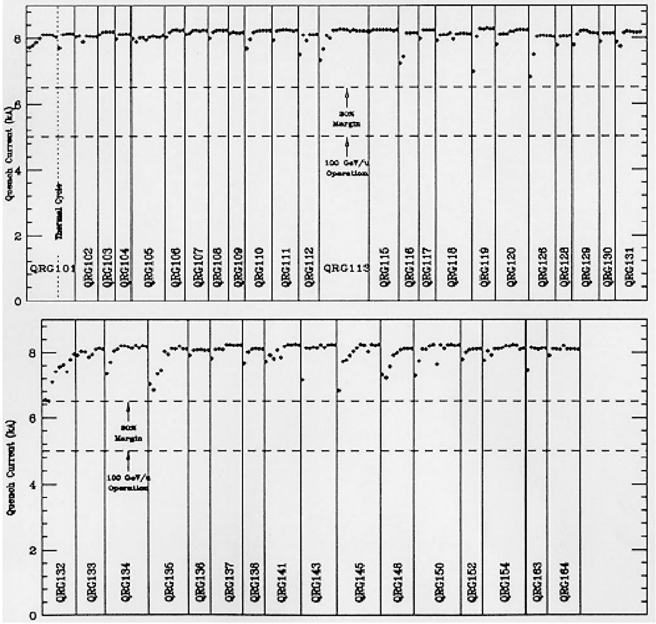
The most intensive activity in the BNL Magnet Division for the past year has been the work on the 8 cm aperture Corrector-Quadrupole-Sextupole (CQS) cold-mass assemblies. The CQS assemblies combine not only the BNL corrector (C), the Northrop Grumman quadrupole (Q) and the Everson sextupole (S) cold masses, but also BNL-produced beam position monitors, recoolers and vacuum equipment. There are 80 different styles of CQS assemblies, because there are many different combinations of corrector magnet types, quadrupole polarity, and beam position monitor type. Special documentation and quality control checks assure that each assembly is correct and properly labeled for its designated position in RHIC. Through August, 91 of the 432 CQS assemblies are complete.

As with the dipoles, the successful production and performance of all RHIC magnets results from the combination of intensive design work and preparations that have been underway for many years at BNL and the very effective collaboration with U.S. Industry. Much credit is due the staffs and management at BNL, Northrop Grumman, and Everson Electric.

-- Art Greene



Initial assembly operations of the CQS cold masses.



Quench performance results for first 40 quadrupole cold masses.

RHIC Magnet receiving and warm acceptance testing area.

Final assembly operations of the CQS cold masses.

RHIC Detector Update: Construction Phase Well Underway

Both of the large detectors, STAR and PHENIX are well along in the construction phase. In book-keeping terms, counting the budgeted cost of work accomplished through July 1995, STAR is about 28% complete, and PHENIX about 19%. In more concrete terms, both the large detector magnets are being fabricated in various parts of the world; the STAR time projection chamber is taking shape in Berkeley; and the various components of the PHENIX tracking and particle identification system are being readied for construction in the U.S., Japan, Russia and Canada. The two small detectors, PHOBOS and BRAHMS, have each received approval to proceed with preparations for construction.

The steel components for the PHENIX central magnet, north muon arm, and muon identifiers are being fabricated at Izhora Steel Works, St. Petersburg, one of the largest foundries in the former Soviet Union. This work is nearing completion, and a contract has been awarded to Rigging International Corp., Alameda, Ca., to transport these pieces from the U.S. port of entry and assemble the magnet in the PHENIX experimental hall. The coils for the PHENIX central magnet were completed by TOKIN Industries, Suwa, Japan, and delivered (September 1995) to BNL.

The large (5 meter i.d.) aluminum coil or the STAR solenoid is being fabricated by Tesla Engineering Ltd. in Sussex, England, and the steel yoke for the STAR magnet is now under contract with Precision Components Corp. in York, Pennsylvania. The ground-breaking for the STAR Assembly Hall, reported elsewhere in this Bulletin, took place in March, and the building should be ready to begin magnet installation early next year.

The STAR TPC outer field cage— the cylindrical shell that serves as the gas vessel for the detector and also provides the voltage gradients that establish the drift electric field within the detector volume— is nearing completion at Lawrence Berkeley National Lab. All of the TPC endcap outer sectors have been completed at LBNL, and fabrication of the inner sectors is beginning. An Electronics Systems Preliminary Design Review for STAR was held in July. This comprehensive review, encompassing all of the STAR electronics systems and their interfaces, went well, and should help ensure that these systems go smoothly into the production and installation phases.

Production of the lead/scintillator modules for the PHENIX Electromagnetic Calorimeter is continuing at IHEP, Protvino, Russia. McGill University has prepared a large hall and clean room for fabrication of Pad Chambers for the PHENIX central arm tracking system. Tsukuba University, Japan, has completed three panels of the time-of-flight detector system. These will be sent to CERN for beam tests.

An integrated plan for the installation and commissioning of each of the detectors in concert with the machine start-up has been developed over the past year by a working group, the ***End Game Task Force*** (see story on next page). The final report discusses a commissioning scenario for the accelerator which permits tuning of the machine while providing sufficient access time to meet the anticipated needs of both the detector groups and the accelerator operations group. This is not a final schedule, but provides an interim model that all participants can work toward, and against which progress can be measured. It is expected that the process will be iterated at a later date to produce a final schedule for the RHIC End Game.

The proposal for Additional Experimental Equipment (AEE) for the RHIC program was favorably reviewed in January by a subpanel of NSAC chaired by Konrad Gelbke. NSAC accepted the subpanel's recommendations in March. The request, which calls for capital funding through the year 2000, is to extend the physics capabilities of STAR and PHENIX, and to provide needed computing resources for the analysis of RHIC data. Two of the AEE detector systems are currently being readied for construction: the Silicon Vertex Tracker for STAR and the North Muon Arm instrumentation for PHENIX. The status of computing facilities for RHIC is discussed elsewhere in this bulletin.

The proposed RHIC spin program was reviewed in June by a committee convened by the BNL Director, and chaired by Charles Prescott, of SLAC. The committee found that the physics goals are indeed compelling and that the RHIC facility will have unique capabilities which could place it in the forefront of the world program of spin-related particle physics. The first phase of the $20M RIKEN initiative for Japanese funding to implement the spin capability of RHIC has been funded, and detailed agreements are being worked out between RIKEN and BNL. -- Tom Ludlam

RHIC Backgrounds Workshop

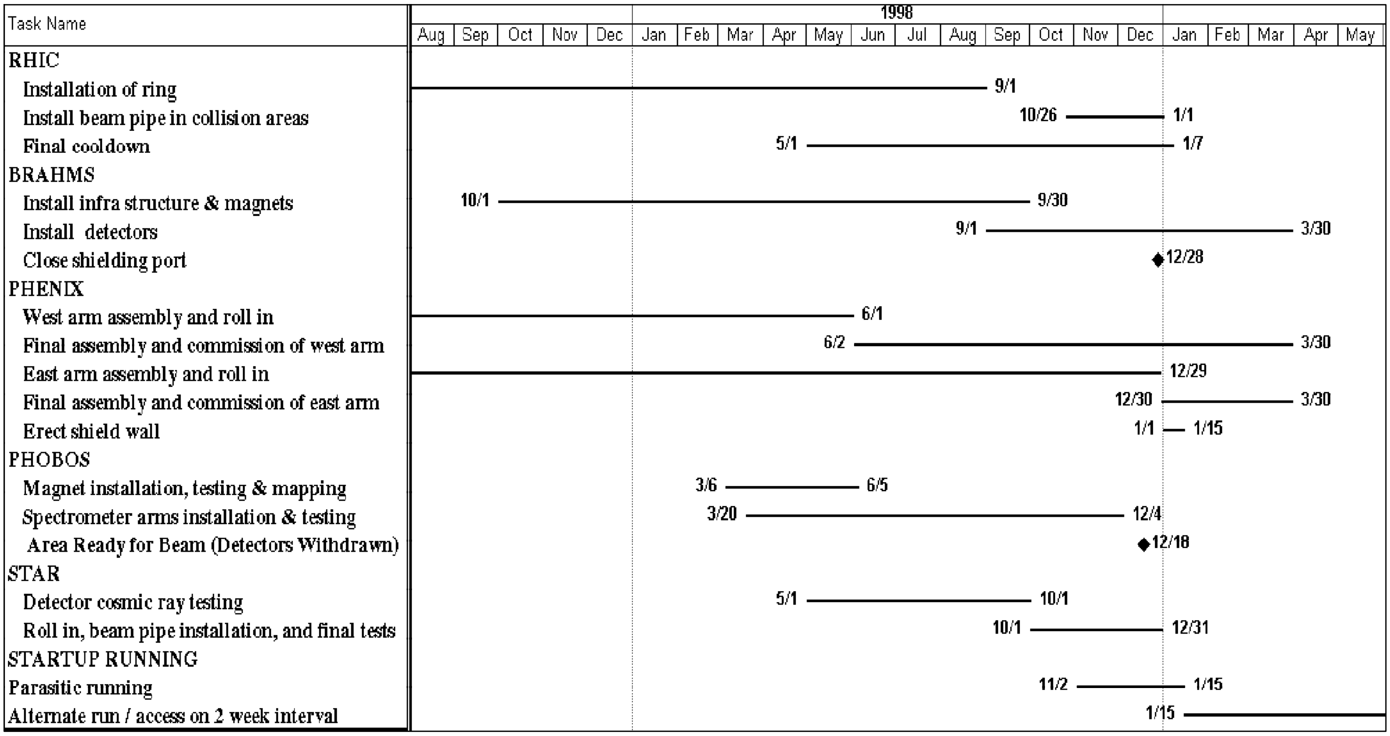
(Continued from Page 2)

Charlie Maguire described studies of background trigger rates made using an event generator, which accounts for two-particle correlations.

Intrabeam scattering: This is the dominant beam-loss mechanism affecting luminosity lifetime at RHIC. J. Wei described calculations of initial emittance growth and estimates of the rate at which ions are lost from RHIC r.f. buckets. Alan Stevens described the RHIC strategy for beam scraping, which will be used to reduce beam losses near the interaction regions.

Based on knowledge from other colliders, several mechanisms are being considered to protect sensitive RHIC detectors from sudden surges in beam loss. Paul Derwent described the CDF experience with various monitoring devices around the Tevatron during commissioning of the CDF Silicon Vertex detector. He noted, in particular, the usefulness of ionization loss monitors similar to those planned for RHIC.

Some background considerations were identified as needing further work: more realistic ion fragmentation in modeling background collisions, cross checks of the e^+e^- pair generator with earlier results, and extended particle tracking studies to refine the collimator/scraper design. A future workshop will explore these and other issues related to backgrounds at RHIC. -- Sebastian White and Glenn Young



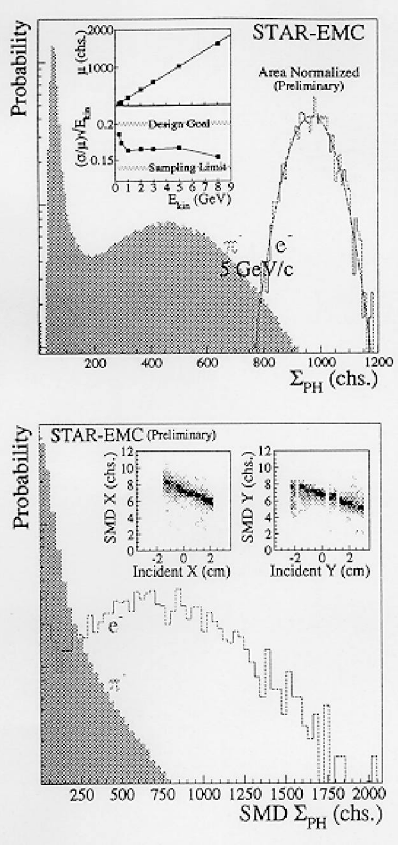
The End Game at RHIC: Commissioning and Initial Operations

A Task Force, chaired by Michael Marx, was commissioned in the Fall of 1994 and charged with studying the ***RHIC End Game*** -- the critical coordinated steps that will be needed to provide an operating machine and full complement of detectors by the target date of April 1, 1999. This Task Force was composed of members drawn from each of the experiments and from the accelerator, and included scientists and engineers with appropriate expertise. The Task Force met periodically during Fall and Winter 94/95 and heard presentations from each of the experiments and the accelerator outlining their preferred schedules, financial and technical constraints, and their needs for technical resources to achieve the goals.

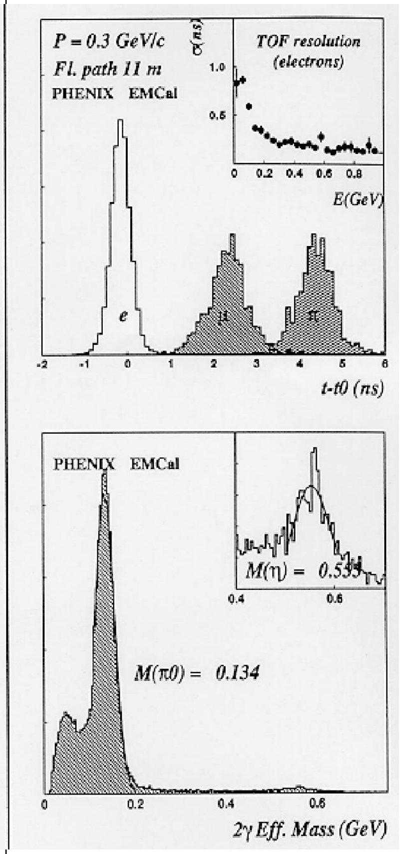
By January 1995, it was clear that there in fact was a schedule that could satisfy the needs of all participants and achieve the project goals. The basic elements of this schedule (see figure) involve completing preparations for circulating beam by the beginning of 1999, which includes the completion of the beam pipe; installation of all of the major mechanical systems of the large experiments; erection of shielding barriers; and the accelerator cool-down. Starting in January 1999, the accelerator will begin circulating and accelerating beams and the tuning process aimed at collisions of Au ions. The schedule calls for a cycle of two weeks of beam followed by two weeks of open access, during which experimenters will finish commissioning of the detectors. This access time also benefits the accelerator crews allowing time for analysis of progress, and if needed, even replacement of magnets. This alternating two week on/off cycle will last until the summer shutdown of 8-10 weeks, and longer if desired by all parties.

Each of the participating groups identified key issues that drove or could have a major impact on their schedules. The accelerator group wanted to insure that beam time scheduled for commissioning would provide sufficient uninterrupted blocks so that they would not be dominated by setup problems, and that there would be sufficient time for both studies (i.e. periods of parameter studies where beams would be inherently variable) and “physics (where the machine could be run at a particular setting with minor variations to improve beam quality). PHENIX had the most complex schedule, due to the large number of systems, the number of large assemblies, and the size of the shield wall which requires significant time and resources for assembly/disassembly. BRAHMS, because of the anticipated late funding profile, expects to complete its detection system during machine commissioning, and thus requires beam-off access times. STAR plans to commission the entire detector before the end of 1998, and thus anticipates no difficulty in coordination with accelerator turn-on.

The report of the End Game Task Force is titled ***A Commissioning and Initial Operations Scenario for Collider and Detectors.*** Available as RHIC Detector Note No. 16, the report concludes by stating that “This report should not be viewed as the final RHIC coordinated schedule. Rather it serves the interim purpose of providing a plan that all participants can work towards, and use to measure their progress. Both the accelerator and the experiments are subject to annual technical and schedule reviews, and slippage should be noted and addressed. We suggest that the process which resulted in this report should be repeated around the Fall or Winter of 1997, approximately one year before RHIC is turned on. At that time all parties will be close enough to completion that the joint schedule can be re-examined, and iterated if need be, producing a final schedule for the commissioning of detectors and RHIC.” -- Michael Marx



STAR test beam results for Small Prototype ElectroMagnetic Calorimeter (SPEMC) plus Shower Maximum Detector (SMD). The electromagnetic calorimeter was configured in a number of different ways including three different SMDs, several angles of beam incidence, and several different depth-segmentations. The upper figure depicts the summed pulse height spectra for 5 GeV/c π^- and e^-. Inserts show linearity and resolution for electrons from 0.3 to 8 GeV/c, where μ and σ are the mean value and width of Gaussian fits to the electron total pulse height spectra. The lower figure shows summed pulse height spectra for the wire/strip chamber SMD at 5 GeV/c. Inserts show correlations between the X and Y positions. The measured position resolution is less than 1 cm. -- Bill Llope



PHENIX test beam results for preproduction EMCal Supermodule (144 channels). The design targets requirements for prompt photon physics in heavy-ion collisions. The upper figure illustrates the timing resolution achieved for a 300 MeV beam. The plot is of time delay at the calorimeter relative to a beam "start" counter 11 m upstream. The time resolution is dominated by photostatistics for low energy electromagnetic showers (as illustrated in insert). The PHENIX EMCal design features high granularity and high resolution for both photon energy and timing. The lower figure shows results at 7 GeV with a 15 cm lucite target placed 2.5 m upstream of the calorimeter; triggers were set to select the charge exchange reaction π^- p --> π° X. Previously, the π° and η° reconstruction algorithms were used only on simulated data.

-- Sebastian White
-- Edward Kistenev

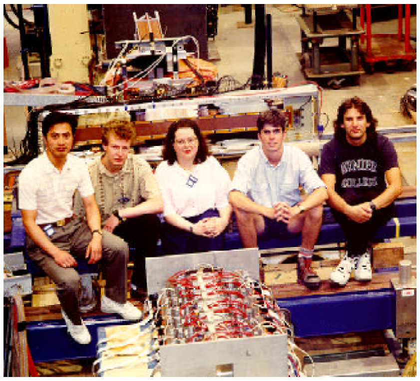
RHIC R&D: AGS Test Beam

An extensive Research and Development (R&D) program in support of the RHIC detectors has been underway for many years. One important component of the RHIC R&D program is the use of the B2 beamline at the AGS for beam tests of prototype detectors. During the most recent AGS proton run (January 1st through mid-June) four STAR and eight PHENIX prototypes were tested.

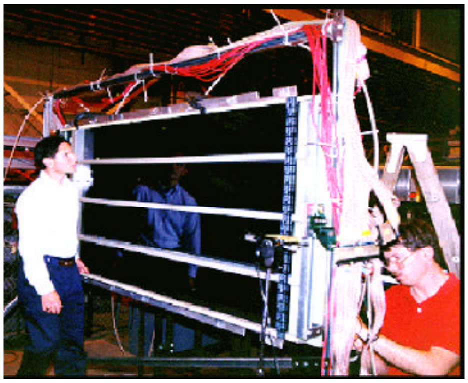
The STAR collaboration tested the Small Prototype ElectroMagnetic Calorimeter (SPEMC), which is a six tower prototype of STAR's barrel EMC. A wire/strip chamber called the Shower Maximum Detector (SMD) is positioned in the stack at a depth of ~5 X_0 and provides a position resolution of less than one centimeter. Some results (including an earlier beam test in June of 1994) for the SPEMC with three different SMD prototypes are shown above (left). More details are available on the WWW at **http://bonner-mac8.rice.edu/**.

The PHENIX tests included three different ElectroMagnetic Calorimeter (EMCal) prototypes, four different tracking chamber prototypes, and one Hadron-Blind Detector (HBD) prototype. Some test results for the lead-scintillator (PbSc) EMCal preproduction Supermodules are shown above (right). Photos of three PHENIX tracking chamber prototypes are shown below. Details are available on the WWW at **http://www.rhic.bnl.gov/~phenix/phenix_home.html**

-- Alan Carroll, Dave Dayton, Bill Christie, Brant Johnson



Four different prototype PHENIX tracking chambers were tested. The small Pad Chamber (PC) prototype (left) is a 1/4 scale version of a sector of PC1 constructed by McGill University. The measured single particle resolution was 1.2 mm. The intermediate Time-Expansion Chamber (TEC) prototype is a 1/4 scale version of one TEC plane constructed by BNL. Energy loss distributions and drift times were measured. Not shown, but also tested, are a Drift Chamber (DC) and four small TEC prototype detectors. -- Ed O'Brien



Off-Line Computing: RHIC Detector Group

The RHIC Detector Group maintains and operates a number of RISC based UNIX computers for the purpose of detector simulation and design for the RHIC experiments. The present system is designed so that it can evolve into a center for off-line computing to support the reduction of data collected by the RHIC experiments when the RHIC collider becomes operational. The discussion of the evolution of the present system into the off-line computing system is an ongoing process characterized by periodic study group meetings chaired by Bruce Gibbard, head of BNL's High Energy/Nuclear Physics Computing Group. We encourage the participants from all approved and proposed RHIC experiments to participate in these important discussions.

At present, the long-term planning for RHIC computing is based on the September 1992 report of the Ad Hoc Committee on Off-line Computing needs for RHIC Experiments ("ROCOCO Report", RHIC Detector Note 8). In July 1995 a Second Ad Hoc Committee was appointed by the RHIC Project Management to provide an updated estimate of the computing resources that will be needed to reduce and analyze data from the RHIC experiments, beginning in the year 1999 when the machine becomes operational, and to reassess the recommended implementation plan. This Committee, chaired by B. Shiva Kumar, Yale University, is expected to submit a report by year's end.

machine	OS	type	Specfp92	Physically attached peripherals
rsgi01	IRIX	I	60	none
rsgi02	IRIX	I	33	none
ribm00	AIX	I/F	83	56 GBytes of user and scratch disk two 8500 Exabyte 8mm tape drives in a 54 cartridge 8mm tape robot
ribm01	AIX	I/F	134	24 GBytes of user and scratch disk two 8500 Exabyte 8mm tape drives in a 54 cartridge 8mm tape robot
ribm03	AIX	F	91	6 GBytes of disk (AFS File System)
rsgi00	IRIX	B	37/node	none
SP1	AIX	B	121/node	none
rhpx00	HPUX	O	58	none

Summary table for all machines in the RHIC Detector Group (RDG) UNIX cluster. In the machine names "r" stands for RHIC, "sgi" for Silicon Graphics, "ibm" for IBM, and "hp" for Hewlett Packard. The SP1 is an IBM machine. The second column indicates the Operating System (OS) running on each machine. The type designators indicate: interactive (I), file server (F), batch (B), and other (O).

The present computing system maintained by the RHIC Detector Group, consists of a number of CPUs divided into three classes, namely compute servers, file servers and interactive nodes. The compute servers consist of an eight CPU symmetric multiprocessor from Silicon Graphics rated at 37 specfp92 per CPU and an eight node SP1 machine from IBM rated at 121 specfp92 per node. The compute server machines are intended for long running, CPU intensive jobs or production jobs. The compute servers are connected to the file servers via FDDI to minimize I/O bottlenecks for jobs running on them.

The file server machines contain all of the user file systems and scratch disk areas. The file servers are IBM RS/6000 machines to exploit the Journaled File System which is part of the AIX operating system. A journaled file system offers the best protection for an individual's files of any of the available UNIX file system types in the event of a machine crash. At present there is approximately 100 GBytes of disk on the file servers with 15 GBytes of disk space devoted to user home directories, 34 GBytes devoted to scratch space, 11 GBytes of space devoted to libraries and commercial software, 15 GBytes under PHENIX control, and 17 GBytes under STAR control . Each of the file servers also contains a dual drive 54 cartridge 8 mm tape robot with a 248 GByte capacity. The robot's main function is to provide user initiated archival and retrieval capabilities. The file servers are on the FDDI ring and will continue to grow and to be subdivided as demand and load dictate.

The interactive nodes of the RDG cluster of machines are intended as X terminal managers, and for code development, (very) short code test runs, editing, document preparation (TeX, LaTeX), mail, World Wide Web access, and other interactive tasks. The interactive nodes have the most extensive installation of user utilities, editors, mail interfaces, etc. Users are encouraged to do most of their day to day work on the interactive machines (both IBM and SGI architectures are available) and to submit long jobs on the compute server nodes.

An attempt has been made to make the machines in the RDG cluster look as identical as is possible. The user's home directory and the scratch disks are all transparently accessible to the user independent of the machine logged into. Thus, code developed on an interactive node should work without any modification on a compute server node of the same architecture as the developing node. The same default "shell" program is supported on all machines, so the user need only learn one shell. Unfortunately, the operating system under the various architectures within the RDG cluster are not identical and the user will have to learn the idiosyncrasies of each. Some of the differences can be hidden using the aliasing feature of the default shell, but not all of them can be.

If you are a RHIC participant and would like to obtain an account on the RHIC Detector Group UNIX Cluster, then telnet to either ribm00f.rhic.bnl.gov or ribm00.rhic.bnl.gov, login as newuser (there is no password) and answer the questions. You will be notified of the creation of your account by return e-mail in a day or so.

For more information on the RHIC Detector Group cluster of machines contact either Chuck Price (chuck@ribm02.rhic.bnl.gov) or Tom Throwe (throwe@rsgi0l.rhic.bnl.gov), or browse the extensive information base contained in the RHIC Detector Group World Wide Web server at the URL -- **http://www.rhic.bnl.gov/html/home.html**.

--Tom Throwe

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First Class

Recent and Coming Events

1995	
September 19-21	DOE Review of RHIC
September 25	Signing of RIKEN-BNL Agreement
October 25-28	DNP Mtg., Bloomington, IN
November 2-4	STAR TAC Review
1996	
January 8-12	PHENIX Collaboration Mtg.
May 20-24	Quark Matter '96, Heidelberg
July 8-19	RHIC Summer Study '96

Who are we missing?

Satoshi stated in our previous issue that "the RHIC Bulletin has a very important purpose: to keep *everyone who is interested* in the project well informed." The obvious challenge is to properly identify *everyone who is interested*. We would appreciate your help. Please let us know of any interested parties who are not yet on our mailing list. We also welcome your comments and suggestions on how to improve the RHIC Bulletin. Thank you in advance for your involvement and support.

Brant Johnson, Editor

How to Reach US

The RHIC BULLETIN is distributed every few months through the RHIC Office at Brookhaven National Laboratory. The staff of the RHIC office will be happy to add new names to the distribution list for this Bulletin, and to provide information or documentation on any aspect of the RHIC project. The Editor welcomes comments, suggestions, and the submission of material for potential news articles of interest to the RHIC Community. Please contact us by:

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New RHIC Home Page on WWW

Further information about all aspects of RHIC, including the activities of RHIC divisions, groups, and detector collaborations is available through the World Wide Web (WWW). The URL (Universal Resource Locator) for the main RHIC home page is:

http://www.rhic.bnl.gov/