BROCHHARDHARD BULLETIN Vol. 54 - No. 22 BROCKHAVEN NATIONAL LABORATORY

RHIC Update: BRAHMS Tracks Its First Heavy-Ion Collisions



Two plots from BRAHMS, showing data taken early on the morning of June 16. The plot above shows the timing response between two sets of detectors for gold beams interacting with residual gas in the accelerator. The right-hand plot shows the response indicating collisions as the peak in the middle of the distribution picture.



F ollowing the steering of the Relativistic Heavy Ion Collider (RHIC) beams to the PHENIX detector and PHENIX's subsequent detection of collisions last Thursday, June 15, the RHIC accelerator crew started to set up for collisions at the BRAHMS intersection region of the RHIC ring.

The first glimpse of collisions at BRAHMS was detected on June 15 at around 11 p.m. by observation of a small increase in a sensitive scaler visible in the main control room. During the early morning hours, BRAHMS recorded several hundred collision events. The first signals were observed by a set of global detectors, as presented in the figure (left). The events were soon confirmed by observing tracks in the time projection chambers pointing back to the beams.

BRAHMS spokesperson Flemming Videbaek of BNL's Physics Department said, "It is very satisfying not only to see the RHIC accelerator delivering the gold beams, but also to see that the BRAHMS detector is capable of identifying collisions cleanly, and that the detector subsystems are working. This is the beginning of a new research frontier that will enrich our understanding of subatomic physics."

All Four RHIC Detectors Track Collisions

L ast week, BNL's Relativistic Heavy Ion Collider (RHIC) made history by achieving the highest-energy heavy-ion collisions ever produced by humankind. All four of RHIC's detectors were on-line to witness the action, and by the end of the week, all four had produced stunning images.

These four detectors — BRAHMS, PHENIX, PHOBOS and STAR — are designed to complement one another in their study of subatomic matter and the quest for definitive evidence of the formation of quark-gluon plasma. All use sophisticated technology and powerful computers to help the scientists track and analyze data.

BRAHMS (Broad Range Hadron Magnetic Spectrometer Experiment):

- The BRAHMS experiment is one of RHIC's two smaller detectors. This device studies charged quark-containing particles called hadrons as they pass through detectors called spectrometers.
- BRAHMS measures only a small number of particles emerging from a specific set of angles during each collision. The momentum, energy and other characteristics of the particles are measured very precisely.
- BRAHMS has 51 participants from 14 institutions in eight countries.

PHENIX (Pioneering High Energy Nuclear Interaction Experiment):

- The PHENIX detector looks for many different particles emerging from RHIC collisions, including photons, electrons, muons and hadrons. To do so, it uses large steel magnets that surround the area where RHIC collisions take place.
- Photons, electrons and muons are not affected by the strong force, which binds quarks and gluons together into hadrons. Because these particles can emerge from the interior of a RHIC collision unchanged, they can carry information about processes or actions within the collision. For example, escaping photons can reveal information about the collision temperature.
- Physically, at 3,000 tons, PHENIX is RHIC's largest detector.
- PHENIX tracks hundreds of particles per collision.
- PHENIX has over 450 collaborators from 45 institutions in 10 countries.

PHOBOS (named for a moon of Mars):

• PHOBOS, the other of RHIC's two smaller experiments, is based on the



DOE's Dennis Kovar Celebrates RHIC Collisions

Dennis Kovar, Director of the Division of Nuclear Physics of the Office of Science, DOE, made a special trip to the Lab last Thursday, June 15, to share in the celebration of first collisions at the Relativistic Heavy Ion Collider (RHIC). He even witnessed a reconstruction of some of the first collisions recorded at the PHENIX counting room. During a party hosted by Satoshi Ozaki, Associate Laboratory Director for RHIC, Kovar congratulated the RHIC

"We are starting an exciting new research program. . . . You are going to rewrite the textbooks."

team, saying, "This is a great day. But tomorrow will also be a great day. In the next weeks and months, we are starting an exciting new research program. You will begin exploring the unknown. You are going to rewrite the textbooks." Laboratory Director John Marburger, who also spoke to the crowd, observed that RHIC is the most complicated accelerator ever commissioned, and that for the entire complement of detectors to be ready as the machine comes on line is unprecedented. Marburger said, "These achievements are a source of pride for the entire Laboratory. They did not happen because a few people made a great effort; they happened because many, many employees, collaborators, contractors, and Department of Energy personnel made a great effort. I am proud to have played even a very small role in making RHIC possible."

premise that interesting collisions will be rare. Thus, the PHOBOS detector is designed to examine a very large number of collisions and to develop a broad view of the overall consequences, along with detailed information about a small subset of the fragments ejected from the plasma. This technique permits researchers to detect rare and unusual events quickly and to study in detail about one percent of the produced particles.

• Some 70 scientists from 12 institutions in three nations are working on PHOBOS.

STAR (Solenoidal Tracker at RHIC):

- STAR, RHIC's other large detector, is as big as a house.
- STAR specializes in tracking the thousands of electrically charged particles produced by each RHIC collision.
- STAR's "heart" is the time projection chamber, made of many electronic systems to track and identify particles. As each collision occurs, STAR measures many parameters simultaneously, reconstructing millions of bits of information from each recorded collision.
- The goal of STAR is to obtain a fundamental understanding of the microscopic structure of interactions between hadrons.
- The STAR team is composed of over 400 scientists and engineers from 33 institutions in seven countries.

To view collision images produced by all four detectors, go to: http://www.pubaf.bnl.gov/pr/bnlpr060800.html.



A RHIC bubble chamber, June 2000 style.

Introducing the 2000 Brookhaven Council



The Brookhaven Council provides the members of the scientific and professional staff, as well as other members of the Laboratory community, an opportunity to bring their concerns to the Director's attention.

Since 1962, the members of the Council have advised and made recommendations to the Director about Laboratory policies that affect the scientific staff. The Council consists of 15 tenured scientific staff members, elected for three-year terms by tenured scientific staff of their respective departments or divisions.

The 37th Brookhaven Council is composed of: (from left) Peter Takacs, Instrumentation Division; Stephen Peggs, Collider-Accelerator Department (C-A); Joseph Wall, Biology Department; Mark Sakitt, Director's Office; Robert McGraw, Environmental Sciences Department; Brookhaven Council Secretary Suresh Srivastava, Medical Department; Brookhaven Council Chairman Michael Creutz, Physics Department; John Shanklin, Biology; Alessandro Ruggiero, C-A; Steven Hulbert, National Synchrotron Light Source Department (NSLS); James Murphy, NSLS; Jack Fajer, Energy Sciences and Technology Department (ESTD); and Greg Hall, Chemistry Department. Not pictured are: Doon Gibbs, NSLS; John Larese, Chemistry; and Hiroshi Takahashi, ESTD.

More information on the Brookhaven Council is available at http:// www.bnl.gov/bnlweb/council.html, or by clicking the administration link on the BNL home page.

Visitor, Vendor Access Update

Access to BNL is controlled by permitting entrance only to those persons who have official business at the Lab and only to those visitors who are properly sponsored. Recently, there has been a steady increase of unannounced arrivals of casual visitors at the main gate.

Thus, to avoid having vendors and visitors delayed at the gate while the purpose of their visit is being verified, the Safeguards & Security Division (S&SD) asks that employees who sponsor vendors and visitors inform the division at least 24 hours before their guests arrive. The 24-hour lead time is needed to compile a visitor log used at the main gate and indexed by name of visitor/event, date and time of arrival, building number, and the name of the point of contact, with phone extension.

Sponsors of visitors should provide S&SD with the following information: the name and company of visitor, date of the visit, approximate arrival time, event attending, (if applicable), visitor destination (building number), and, if the visitor is staying on site, the visitor's

New RHIC & AGS Users' Center Opens



Tom Kirk, Associate Laboratory Director for High Energy & Nuclear Physics, wields the scissors at the ribbon-cutting opening ceremony for the new RHIC & AGS Users' Center, located off Brookhaven Avenue in Building 355. With him are Susan White-DePace, RHIC/AGS User Administrator, and Tom Ludlam, Deputy Associate Laboratory Director for High Energy & Nuclear Physics.

The grand opening of the RHIC & AGS Users' Center was celebrated on Wednesday, June 7, by a Lab-wide invitation to a ribbon-cutting ceremony and open house with refreshments

Energy & Nuclear Physics. "The RHIC & AGS Users' Center staff will work closely with the RHIC/AGS Users' Executive Committee and the BNL staff services agencies to establish and maintain improvements in the quality of life that visitors experience during extended stays at BNL." The center staff will be headed by Susan White-DePace as RHIC & AGS User Administrator. White-DePace, who has worked at BNL for more than 23 years, was instrumental in establishing the users' office at the National Synchrotron Light Source. She will be assisted by Angela Melocoton, who moved to the new center from the Reactor Division. "The center was designed to be used regularly by visitors, not only as a check-in point when they arrive at the Lab," explained White-DePace. "With this in mind, there are computers available for logging into e-mail or working on a paper. We have zip drives, CD ROM, and tape backup facilities available. There is a meeting room where small meetings can be held or where individuals can relax over a cup of coffee or espresso and converse.'

RHIC Facts

RHIC's beam will travel at 99.995 percent the speed of light, which is 186,000 miles/second, or more than 300,000,000 meters/second.

RHIC's beam is not continuous in the ring, it is made up of 57 separate "bunches," each containing billions of ions.

RHIC ions make 100,000 trips around the ring every second, with beam lifetimes of up to ten hours. Thousands of RHIC collisions will take place each second. Each collision will send out a shower of thou-

sands of subatomic particles. If quark-gluon plasma is formed in a RHIC collision, it would last less than ten millionths of a billionth of a billionth of a second, or

the center of the sun. RHIC ions are so small that, even at nearly the speed of light, the force of their impact will be about the same as the impact of two mosquitos colliding.

Over 20 years, RHIC will use less than one gram of gold.

RHIC's two crisscrossing 2.4-mile rings are made up of 1,740 superconducting magnets, which are strung end-to-end like beads on a necklace.

RHIC is powered by more than 1,600 miles of superconducting niobium titanium wire wrapped around the RHIC magnets.

To make the 1,740 superconducting magnets carry electricity without resistance, RHIC magnets are cooled by liquid helium to minus 452 degrees Fahrenheit, which is nearly absolute zero. Absolute zero is minus 460 degrees Fahrenheit, or minus 273 degrees Celsius the coldest anything can be.

In all, RHIC contains enough helium to fill all the balloons in the Macy's Thanksgiving Day Parade for the next 100 years.

To chill the helium, RHIC's refrigerators draw 15 megawatts of electrical power. One megawatt is enough to power 1,000 homes.

Joseph

RHIC's two large experiments, STAR and PHENIX, are bigger than houses: PHENIX weighs 3,000 tons, while STAR weighs 1,200 tons.

Shop for Food on Site

point of contact and extension.

For after hours/holiday and weekend arrivals, an alternate phone number, i.e., home, cell phone, etc., is needed. Call Vicki Feldman, Ext. 4271, for a copy of the S&SD Visitors' Form, available in Word or WordPerfect, which shows all "Mandatory Fields" of information needed. Mandatory Fields must be filled in.

During business hours, send this information via e-mail to: visitors@bnl.gov on Mondays through Fridays only, before 4 p.m., or fax the information to Ext. 5688, 24 hours a day.

For same-day visits, call Ext. 4271 or 2280. To notify S&SD before 8:30 a.m. and after 5 p.m., call the police desk at Ext. 2238 or Ext. 2239. Due to the volume of visitors, do not call the main gate with this information. during the day.

Located in the north wing of Building 355, the new office will provide a central contact point for services required by on-site visitors working at the Relativistic Heavy Ion Collider (RHIC) and the Alternating Gradient Synchrotron (AGS). These services will include registration, badging, training information, and more.

In addition to a users' reception area and a small lounge, the center has computer terminals and a coffee machine. The office will also maintain a comprehensive database of user information and provide communication with the user community worldwide.

"The most important overall function of the new center will be to provide users with ready access to staff who know BNL well and can help users get their work done as effectively as possible during their stay at the Lab," noted Tom Ludlam, Deputy Associate Laboratory Director for High To accommodate user groups on site, Flik has a new market service to provide fresh-sliced cold cuts, salads, vegetables, and fruits so that shortterm facility users and visitors, or those with tight schedules may do their evening shopping on site.

From Monday to Friday, by 10 a.m., you may fax your shopping order for cold cuts and salad by the pound, produce, cheese, eggs, milk, and breads to 345-6475, or drop the order off at the Berkner Hall cafeteria. The order may be picked up by 4 p.m. at the cafeteria, or, by prior arrangement, after 5 p.m. at the Brookhaven Center. Payment is made by cash at the pickup time.

Order forms are available at the RHIC & AGS Users' Center, the Cafeteria, the NSLS User Administration Office, and by e-mail from Flik@bnl.gov.Flik also invites requests for other items, which they will try to provide. Future plans include Webbased ordering.

Hospitality News

The Hospitality Committee invites all on-site residents, their spouses and friends to take part in the following activities. More details are posted in the laundry and on the door of the Recreation Building, both located in the apartment area. For more information, call Hospitality Chair Mimi Luccio, 821-1435.

Welcome Coffee

Coffee is served to apartment area residents every Tuesday, from 10 a.m. to 11:30 a.m., in the lounge of the Recreation Building. Find out about life at the Lab and make new friends. Call Shashi Somani, Ext. 1056, for details.

July 4th Barbecue

On Tuesday, July 4, at 5 p.m., all families living on site are invited to a BBQ in the apartment area. Bring salad or dessert dishes to serve eight people. For details, call Luccio, 821-1435, or Somani, Ext. 1056.

How Well Do You Eat?

The Health Promotion Program is now offering free nutritional analysis to BNL employees. The analysis is generated by a computer software program, which assesses personal intakes of fat, carbohydrate, protein, cholesterol, fiber, vitamins, and minerals. The program compares these data with recommended intakes, taking into account individual exercise habits. A report is then compiled making recommendations for nutritional improvements, exercise programs, and if desired, weight management. If you are interested, contact Mary Wood, Ext. 5923 or wood2@bnl.gov.

Arrivals & Departures Don't Look Now Safety Glasses Office John J. Galvin CIGPA

The Safety Glasses Office, Bldg. T88, will be closed on Wednesday, July 5, and it will reopen on Wednesday, July 12.

Indian Classical Sitar Concert, July 1

he BERA Indo-American Association (IAA) is sponsoring an Indian Sitar Music Concert on July 1, at 7 p.m. in Berkner Hall. Featured will be music by the distinguished sitarist Krisha Mohan Bhatt, accompanied by





Samir Chatterjee, a leading tabla (drum) player.

Bhatt's creative musical style has made his performance of Hindustani ragas known throughout India, Europe, and America. Chatterjee, who has performed in many musical festivals in India and abroad, has been featured on radio and TV, and has recorded several LPs and CDs

Tickets for this event are \$12 for adults, \$10 for IAA members, and \$8 for students of 18 and under. Anyone six years of age and under will be admitted free. For tickets or more information, contact Achyut Topé, Ext. 5672, or 345-2677; Kumi Poindya, Ext. 7734; or Raj Rao, Ext. 7607. Tickets may also be purchased at the door.

Manhattan Bus Trip This Sunday, 6/25

This Sunday, June 25, employees, visitors, guests, and their families are invited to join a bus trip to Manhattan sponsored by the Hospitality Committee. The cost is \$8 per person. The bus will leave at 9 a.m. sharp from the Lollipop house in the apartment area and return from the city at 7 p.m. To reserve, call Monique de la Bey, 399-7656.

March Into May

Congratulations to all participants for successfully Marching into May! We thank all those who took part in the challenge, and would like to extend a special thanks to the 32 captains for devoting their time to the program.

Arrivals

Robert J. Kavander Plant Eng.

Margaret Taneus Medical

Departures

Hal A. Lewis Biology

Now that T-shirts have been given out and evaluations are coming in, the process of analyzing data for the "March Into May" Fitness Program has begun. Initially, surveys were sent to 303 interested employees. Surveys were returned by 264 employees who had participated in the 10-week fitness program. Of the 264 participants, 78 percent reached their personal end goals, and 90 percent reached at least 100 points by the end of the 10 weeks. The points achieved ranged from 37 to an astonishing 1,170. Listed below are the top five scorers. One point equals 10 minutes of physical activity.

| Sheikh Farooq: | 1,170 points |
|------------------------|--------------|
| Robert Weggel: | 770 points |
| Joan Smith: | 663 points |
| Darlene Reeves: | 618 points |
| Sarah Howard: | 600 points |

A random raffle was held for participants who turned in their final points. The winners are Bill Reeside, Reactor Division; Brian Boyle, Collider-Accelerator Department; and Jagdish Tuli, Energy, Science & Technology Department. If you have any questions or comments, contact Mary Wood, Ext. 5923, wood2@bnl.gov.

Huntington Junior Wins Bridge-Building Contest

auren Gai, La center, a junior at Huntington High School, was the winner in the Lab's annual contest for model bridge building, held at BNL on February 26. At the competition, **BNL** engineers tested the loadcarrying capacity of more than 250 model bridges built by students from 23 schools in Suf-

folk County. The goal was to build a bridge that could bear the heaviest load for its weight.

The bridge built by Gai, shown here with Laboratory Director John Marburger (left) and her father, Dennis Gai (right), weighed less than 30 grams and held nearly 4,000 times its weight!

IBEW Meeting

Patchogue-Medford High School — to the 2000 International Bridge Building Contest in Scranton, Pennsylvania. Karen McNulty

Omnipoint Demo, 6/29

Gai won a \$100 gift certificate to

- along with second-place win-

CompUSA and an all-expenses paid

ner Craig Gomes, a senior at

On Thursday, June 29, 10 a.m.-

2:30 p.m., Berkner Hall, Omnipoint

Communications will discuss special

rates for BNLers buying digital PCS

wireless services on Omnipoint's GSM

network. All service plans include free

caller ID, voice mail, SMS messaging,

Fall Courses On Site

In partnership with Suffolk County Community College, BNL is willing to offer both pre-college and college courses on site this fall. Required minimum enrollment is 15 students for any class. If you are interested, contact Marilyn Pandorf, Ext. 5251, pandorf@bnl.gov, or Star Munson, Ext. 7631, munson@bnl. gov, by July 10. Classes will begin the first week in September.

Pre-college Program

The pre-college program will be the third such program offered since 1998. It consists of four classes each in English Brush-up, Computer Literacy, Research and Study Skills, and Math Brush-up. Four classes on each subject will be given on Tuesday, Wednesday, or Thursday evenings from 5:30 p.m. until 7:30 or 8:30 p.m. Several students who attended the first precollege class in 1998 have already received their AA Degrees.

On-site college courses to be offered in the Fall semester may include:

CS30 - Portfolio Preparation. Provides adults with a vehicle for identifying and demonstrating college-level learning achieved outside the class-room. Students are provided information and techniques enabling them to prepare the portfolio, which may then be presented to the faculty for evaluation to earn equivalent credit, which can be applied towards a SCCC degree. No prerequisite, 1 credit hour. **BA11** - Introduction to Business. Recommended as background for further studies in business, topics include organization, marketing, purchasing, production, finance, personnel, labor relations, and government regulation. No prerequisite, 3 credit hours. ID52 - Women's Legal Place. Interdisciplinary Study course, which examines the philosophical and social factors that determine women's current as well as historical status in the American legal system. Issues include employment, divorce, child custody, insurance. No prerequisite, 3 credit hours. BA21 - Business Mathematics. Does not satisfy mathematics/science elective requirements, covers use of mathematics in various business applications. Topics include percentages, interest, marketing computations, insurance, taxes, and investment problems. No prerequisite, 3 credit hours.



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On the World Wide Web, the Brookhaven Bulletin is located at www.pubaf.bnl.gov/bulletin.html. A Weekly Calendar listing scientific and technical seminars and ectures is found at www.pubaf.bnl.gov/calendar.html. Local 2230, IBEW, will hold its regu-

lar monthly meeting on Monday, June 26, at 6 p.m. in the Knights of Columbus Hall, Railroad Avenue, Patchogue. There will be a meeting for shift workers at 3 p.m. at the union office.

The agenda includes regular business, committee reports and the president's report.

and more. For more information, call Richard Goll at (516) 343-5900. William Floyd Parkway Repaving

The northbound side of William Floyd Parkway is scheduled to be repaved from south of the Long Island Expressway (LIE) up to BNL. To avoid some of the traffic delays, use the north gate entrance when possible, or try using Longwood Road, just opposite the Lab's main gate.

To come to BNL using Longwood Road:

Eastbound on the LIE:

Use Exit 66. Go left onto Sills Rd. Continue on that road: left-hand fork at the first light, sharp right curve at the next light, then bear left at the next light onto Yaphank Middle-Country Rd. At Longwood Rd., turn right. Emerge opposite the BNL Main Gate.

Westbound on the LIE:

Use Exit 67. Go right onto Yaphank Ave. Go left onto Yaphank's Main St. Go right onto Yaphank Middle-Country Rd.

Go right onto Longwood Rd. Emerge opposite the BNL Main Gate.

Or, just brave the traffic jam!

No Bulletin July 7

In observance of Independence Day, the Lab will be closed on Tuesday, July 4, with a Floating Holiday given on Monday, July 3. So there will be no Bulletin published on Friday, July 7.

BERA Book Fair

On Thursday and Friday, June 29 & 30, from 10 a.m. to 3 p.m., BERA will sponsor a Book Fair in Berkner Hall lobby, featuring fun reading ranging from children's stories to cookbooks to New York Times best-sellers.

These new, hardcover books will be sold at a 50 to 70 percent reduction. They will be in stock, ready for immediate purchase at the fair. Some gift items will also be available. Credit cards and checks will be accepted.

At the fair, you may fill out a coupon to be in a drawing to win a book of your choice. For more information, call Andrea Dehler, Ext. 3347, or M. Kay Dellimore, Ext. 2873.

BERA Offers

Tickets for the Waldbaum's Balloon Festival and the Radio City Music Hall are on sale in the BERA Sales Office, weekdays, 9 a.m. to 3 p.m. For more information call Andrea Dehler, Ext. 3347, or M. Kay Dellimore, Ext. 2873.

Balloon Festival Tickets

BERA is offering reduced-rate tickets to the Waldbaum's Balloon and Music Festival to be held Friday through Sunday, August 18-20, at Calabro Airport, Shirley.

More than 75 brightly-colored balloons, some over 13 stories high, will be suspended over the Long Island landscape. Add a balloon glow, fine arts and crafts, spectacular fireworks, musical acts and other family entertainment and the result will be a lot of fun for those attending the festival.

Festival times are:

| Friday, August 18, | 1 p.m 9 p.m. |
|---------------------|-----------------|
| Saturday, August 19 | 6 a.m 10 p.m. |
| Sunday, August 20 | 6 a.m 7:30 p.m. |
| | |

| DLINA | CUSL | *** | DC. | |
|---------|------|-----|-----|----------|
| Adults: | | \$ | 9 | (\$15 at |

gate) Child (ages 4-12): \$5 (\$10 at gate) On Friday night, Mary Wilson, The

Supremes, and Chubby Checker will be in concert. Also on Friday evening will be the "Balloon Glow." Saturday night will feature The Beach Boys and Fireworks by Grucci. On Sunday, a Summer X Jam Concert will feature BB Mak, Take 5, and more.

Radio City Music Hall Christmas Show

On Saturday, December 9, BERA will offer a round-trip bus trip to New York City, which will include the 2 p.m. matinee of the famous Christmas Show Spectacular at Radio City Music Hall. The bus will leave the Brookhaven Center promptly at 9 a.m. and return to the Lab at about 7 p.m. You may begin your day in Manhattan by shopping, browsing, having lunch or just enjoying the holiday decorations at the popular F.A.O. Schwartz, Macy's or Tiffany's. After the show plan on viewing the Christmas tree at Rockefeller Center. The cost of the trip will be \$89 per person, which includes coach bus and orchestra/front mezzanine seats at the Music Hall. Reserve early as this trip sells out quickly.



Roger Stoutenburgh, BNL photographer, spotted some of the Lab's newest users.

the above criteria: certified OSHA Hazardous Materials Technician: Certified in Confined Space Rescue: current line officer in home department; and posses sion of an associate degree or higher in fire protection technology. Must be willing to work shifts at the completion of the training period. Emergency Services Division.

MK2588. ADMINISTRATIVE/SECRETARIAL POSI-TION - Requires an AAS in secretarial science or equivalent, excellent oral and written communications skills, significant Laboratory administrative experience and a thorough knowledge of Laboratory policies, practices and procedures. In addition, must possess proficiency in MS Office products, which include Outlook, MS Word and PowerPoint and knowledge of Laboratory travel system and web-based requisitions. Must have the ability to work with quickly changing priorities, have demonstrated organizational and deci sion-making skills and the ability to interact with all levels of Laboratory staff as well as staff of outside organizations. Will provide administrative/secretarial support to the Associate Laboratory Director - Basic Energy Sciences in performing a variety of complex administrative assignments and handling daily workflow which includes, but is not limited to, scheduling meetings with internal and external contacts, maintaining/ updating Outlook calendar, preparing correspondence and presentation material, and undertaking other assignments as required. Basic Energy Sciences Directorate

DD8980. SECRETARIAL POSITION - Requires an AAS degree in secretarial science or equivalent experience, good communication skills, and a knowledge of Laboratory policies and procedures. Proficiency is required in word processing, preferably Microsoft Word, spreadsheets, databases, e-mail, IPAP and WebReqs. Duties will include arranging conferences and meetings, processing both domestic and international travel and visitor appointments. Physics Department.

DD8389, OFFICE SERVICES POSITION (Temporary Appointment) - Requires previous travel office experience, including several years' SABRE computer expe rience. Will assist Laboratory staff in all aspects of travel such as airline, railroad, bus and ferry reservations, limousine or car rentals, and accommodations. Staff Services Division

OPEN RECRUITMENT – Opportunities for Laboratory Employees and Outside Candidates

MK8895. PHYSICIST - to work in the Omega Group on the ATLAS experiment at the LHC at CERN. The Laboratory is playing a leading role in the construction of the liquid argon calorimeter and is responsible for managing the overall U.S. effort in the Liquid Argon Subsystem. The successful candidate will be expected to take a leadership role in defining and carrying out our physics role in ATLAS, will be involved in the development and construction of the readout electron ics chain and cryostat and cryogenics for the Barrel $\mathsf{E}\mathsf{M}$ calorimeter and be expected to take a leading role in the U.S. liquid argon subsystem management. Requires a Ph.D. in experimental particle physics with a strong background in calorimetry and experience in construction and commissioning of large detectors highly desirable. Under the direction of D. Lissauer.Physics Department.

NS8313. PROGRAMMER/ANALYST POSITION -Requires a bachelor's degree in computer science, other relevant field, or equivalent work experience. and a minimum of three years' experience developing and programming business applications. Experience with relational databases (Oracle). Windows NT and Internet-enabled application development is required; a working knowledge of PeopleCode, SQR and Query/ Crystal is preferred. Business Systems Division



LABORATORY RECRUITMENT - Opportunities for Laboratory Employees Only

MK8845. FIREFIGHTER/EMT-D POSITION (Term Appointment) - Requires five years' progressive experience in a fire department qualifications as a motor pump operator on a Class A pumper, and possession of a current NYS EMT-D certificate. In descending order of importance, the following criteria will be used for selection in the event two or more individuals meet