U.S. Senator Hillary Rodham Clinton Visits BNL

Strange physics has taken a great leap forward at BNL, where physicists have for the first time produced a significant number of “doubly strange nuclei” — nuclei containing two strange quarks.

Strange quarks are one of the six types or flavors of quark believed to make up the particles in the nucleus of an atom. Studies of doubly strange nuclei will help scientists explore the forces among these particles, particularly within what is called baryonic strange matter, in which the quarks are confined to baryons, which contain three quarks. In addition, studying doubly strange nuclei may contribute to a better understanding of neutron stars, the supernova remnants of burnt-out stars, thought to contain large quantities of strange quarks.

“This is the first experiment to produce large numbers of these doubly strange nuclei,” said Adam Rusek, Collider-Accelerator (C-A) Department, who, with Robert Chrien, Physics Department, and Tomokazu Fukuda of Osaka, Japan, is a co-spokesperson for the collaboration. Rusek explained that the whole experiment was conceived and planned by Fukuda, who first had the apparatus designed and built in Japan, then brought the experiment to BNL to use the world’s cleanest and most intense kaon beam — produced at the Alternating Gradient Synchrotron (AGS).

Collaborating on the experiment are 50 physicists, representing 15 institutions in six countries. They describe their findings in an upcoming issue of Physical Review Letters. Two collaborators, Joe Nakano and Toru Tamagawa, are from the University of Tokyo. Other BNL collaborators on this “strange” research area are: Philip Pile, C.A., and Richard Satter, Physics. Four previous experiments conducted over the past 40 years in the U.S., Europe, and Japan have produced one such nucleus each, with varying degrees of certainty.

In the current publication, which is based on data taken in 1998, the collaboration describes 30 to 40 events out of several hundred produced. “That’s enough events to begin studies using statistical techniques,” Rusek said.

With the ability to produce appreciable numbers of doubly strange nuclei, “BNL is now the best place in the world to study this strange matter,” said Morgan May, who leads BNL’s strangeness nuclear physics program.

At the AGS with the cylindrical detector system for the doubly strange nuclei experiment are: (front, from left) Adam Rusek and Robert Chrien, (back, from left) Sidney Kahana, Philip Pile, and Morgan May.

BNL’s AGS Produces First Significant Number Of ‘Doubly Strange Nuclei’

Save the Date: 9/11 Celebration Set For Lab Director

The Lab community is invited to a celebration sponsored by BSA for Laboratory Director John Marburger on Tuesday, September 11 at 4:7 p.m. at Berkner Hall. Refreshments and entertainment will be provided.

Marburger, who was selected by President George W. Bush for nomination as Assistant to the President for Science & Technology, will continue to serve as Lab Director until the Senate confirmation process to be scheduled this fall is complete.

Other guests include: (from left) Biology Department Chair Carl Anderson, Medical Department Chair Linda Chang, U.S. DOE Brookhaven Area Office’s Robert Gordon, Staffer Julie Dade Howard of Senator Rodham Clinton’s Long Island Office, U.S. Senator Hillary Rodham Clinton, and BNL Director John Marburger.

BSA Distinguished Lecture

The Aging Process

Biomolecular gerontologist Caleb Finch, a professor at the University of Southern California (USC), will talk on “Puzzles and Paradoxes of the Aging Process,” the next BSA Distinguished Lecture, to be held on Wednesday, September 12, at 4 p.m. in Berkner Hall.

Finch will discuss the basis for wide variances in life span. While each species has a characteristic longevity — humans outlive mice, and mice outlive nematode worms, for example — the life span of individuals of any species varies considerably.

According to Finch, genetics plays a relatively modest role in control of life span and aging. The case is remarkably clear for nematodes (continuation on page 2).
of Library Events

User Assistant

• The B&H Sales office is located in Berkner Hall and is open weekdays from 9 a.m. to 3 p.m. For more information, call B&H at 636-7390. Contact Andrea Biesk, Ext. 3147, or M. Kay Hollos, Ext. 2873.

• Additional information for Hospitality Committee events can be found at the Laboratory House and the bulletin in the apartment area.

• The location of the building, B&H, is located in the apartment area.

• Contact names are provided for most events, for more information.

• Calendar events flagged with an asterisk (*) have an accompanying story in the bulletin.

— EACH WEEK —

• Monday: Arts & Crafts

• Monday & Thurs.: Cardio Kickboxing
  Monday, Tuesday, 9/3, 4—NEXT WEEK—
  noon-1 p.m., Berkner Hall.

• Wednesday: Wall Practice Sessions
  12:15-12:30 p.m. Phillip D. Rice. Free. 4a Campbell, Ext. 2206.

• Monkey & Thurs.: Cardio Kickboxing

• Wednesday: Yoga Practice Sessions
  noon-1 p.m. Brookhaven Center for Human Potential. Mary Wood, Ext. 5932.

• Wednesday: Volunteer Sessions
  1-2 p.m. Phillip D. Rice. Free. 4a Campbell, Ext. 2206.

• Wednesday: Search for Strange Particles

— NEXT WEEK —

• Monday, Tuesday, 9/3, 4

The Lab will be closed in honor of Labor Day.

Thursday, 9/6

Corporate Express Demo
7-9 a.m. Rec. Bldg. Berkner Hall. The Lab’s Ewy.com of the future will be shown. A new tin can full of products show. Damos from manufacturers includes 3M.

— WEEK OF 9/10 —

Tuesday, 9/11

Celebration for Lab Director
4 p.m., Berkner Hall. All the Lab community is invited. See page 1.

Wednesday, 9/12

Divorced & Separated Support Group
3-5 p.m., Berkner Hall, Room D. Mary Campbell, Ext. 4776, maryl@bnl.gov.

Brookhaven Town Fire Marshals, BNF Fire/Rescue Group

Review Emergency Preparedness

Members of the Town of Brookhaven’s Hazardous Materials Response Team visited with BNL’s Fire/Rescue Group this week to discuss emergency preparedness and community outreach. The session included a review of lessons learned from recent events as well as an exchange of knowledge of each other’s equipment and practices. The Brookhaven Town Fire Marshals brought along their new hazardous materials response vehicle (above, right) for a demonstration, and BNL firefighters displayed their new Rescue 4 (above, left). Pictured with others (from left) are BNL Fire/Rescue members: Lieutenant Antonio Realmtuo, Firefighter James Forkin, Captain Charles LaBallari, and Firefighters Kevin Cosgrove, Joseph Perry, Timothy Devine, and William Strelecki.

Thank-you, BNL Volunteers, for Community Involvement

Photographed outside Berkner Hall are some of the many BNL volunteers who have given time to represent the Lab through programs such as the Ambassadors, the Envoys, Longwood Mentoring, Speakers’ Bureau, and the Tour Program, most of which are grouped under the umbrella of the Community Involvement Office.

Doubley Strange Nuclei

Strange creations

To create these doubly strange nuclei, the researchers used the AGS beam of negatively charged kaons to strike a beryllium target and interact with its protons, causing some of the energy to convert into new strange quarks. These quarks then recombine to form a variety of particles, some of which continue to interact. Occasionally, a structure containing a proton, a neutron, and two lambda particles — each composed of one up, one down, and one strange quark — is formed. This double-lambda structure, with its two strange quarks, is the observed doubly strange nucleus.

Look for pions

Detecting the formation of this strange species is no easy task. It is like finding a subatomic needle in a particle-soup haystack. For one thing, many other species are produced in the collisions. Plus, the scientists cannot see the double lambda structure directly. Instead, they look for pions, a subatomic product that the lambda emits as they decay in less than one billionth of a second.

Furthermore, to infer that the pions came from a nucleus containing two lambdas, there must be two pion decay signals at very specific energies. From the analysis, the researchers concluded that several hundreds of lambda-lambda particles were produced.

The most important part is eliminating all the other possible explanations for these events, said Sidney Kahana, a BNL Physicist. The scientists are left with this double lambda species as the only explanation.

Japanese contribution

"I want to stress the enormous contribution of the two Japanese scientists, Joe Nakano and Toru Tamagawa, from the University of Tokyo, who completed the theoretical calculations on this experiment," said Chrien. In addition to his work on the physics and analysis of the experiment, Nakano was responsible for the design, construction, and operation of the cylindrical detector system (CDS), which, Chrien explained, was the crucial measurement element of the experiment.

Tori developed the analysis techniques and simulation codes required to understand the CDS data. He produced results for several calibrations and tests verifying the CDS response, as well as the analysis of the production data.

Two lambda laboratory

The scientists believe they have a reliable method for producing the double lambda species, they would like to produce more so that they can get better measurements of the binding action, between the two lambda particles.

"We can use this nucleus as a laboratory in which the two lambdas can be held together long enough to study," Kahana said.

Based on the current data, the interaction between lambda particles appears to be rather weak — too weak for the two particles to merge and produce a postulated, six-kaon structure called an H particle. But further experiments are necessary, the scientists say.

The interaction between lambdas may also offer insight into the properties of neutron stars, which are thought to contain vast numbers of strange particles, including lambda. Neutron stars are the only place in the universe scientists believe such bizarre matter exists in a stable form.

— Diane Greenberg

BSA Lecture on the Aging Process

(contin’d)

Rockefeller University in 1969. Finch has received several major awards in biomedical gerontology, including the 1985 Robert Kleemeier Award of the Gerontological Society of America, the 1995 Sandoz Premier Prize of the International Geriatric Association, and the 1999 American Aging Association’s Research Award.

Finch became a University Professor in 1989, an honor held by only seven other professors at USC. A member of ten editorial boards, he has written over 150 articles.


— Diane Greenberg

Wanted: Helpers in Planning “Take Our Sons to Work” Day

Helpers are needed to organize the next “Take Our Sons to Work Day,” which will be held on Monday, October 8. Parents interested in helping should contact Susan Foster,Ext. 2888.
The Bulletin August 31, 2001

Public Meeting, 9/12: BGR Cleanup

An engineering evaluation/ cost analysis exploring cleanup options for the BGR fuel canal is now available for public review until comment at http://www.bnl.gov/bgr/Docs/ CanalEE-CA.html. The public comment period runs through September 20, 2001. BNL will hold a public meeting on the comments on September 12, 2001, at Berkner Hall, from 7 to 9 p.m. No reservations are requested, but a courtesy call to Kathy Gurski, Ext. 7459, would be appreciated.

BNL Dance Club Lessons Start 9/12

Two Left Feet? First Lesson Free!

• Who? You! Individuals or couples!
• When? Learn to dance with the BNL Dance Club’s former U.S. Ballroom champion! Starting September 12, at 6:7 p.m.
• Where? 1st lesson, Brookhaven Center!
• Why? Because it’s fun! Good exercise for both mind and body — press your family, friends — and yourself! Good activity for couples!

8th Walk for Beauty, 9/30

FIGHT BREAST CANCER

On Sunday, September 30, the entire Lab community — employees, retirees, guests, and visitors — is invited to join the BNL team that will participate in the 8th Annual Walk for Beauty. The proceeds from this walk will benefit breast cancer programs at the University Hospital & Medical Center at Stony Brook, influencers, Sutherland, Ext. 3111, or Donna Grabowski, Ext. 2720, for more information.

Free English Classes

BNL offers free English for speakers of other languages classes for employees, guests, visitors and their spouses. These one-on-one classes will be held in the Recreation Building (R-Bldg.), Ext. 1207. To receive an assessment of their English and sciences within the State University system, go to http://www.bnl.gov/bgrr/Docs/walk匪nally.html.

Guests, visitors welcome.

Trash Day

On Wednesday, September 12, 2001, at noon, Berkner Hall will be open for breakfast and lunch. Only employees, visitors, facility users, and parents of employees (who have photo identification and they, or their children, are permitted in the building) will be permitted to enter the building. Guests, visitors, and the Lab community can join the Lab family and contribute to our clean-up effort! Visit http://training.bnl.gov/ for more information. Get your friends and family together and create a Driftwood Island at the Recreation Office, Human Resources Division, Bldg. 185. Ext. 1129. For more information, call Pam Mansfield, Ext. 7146. Meetings are being held at 9 a.m. throughout September. For more information, email Pam Mansfield, pam@bnl.gov.

Swimming Pool, Gym Fall Schedule

The fall season at the swimming pool will begin on Wednesday, September 5. The pool will be open Monday through Sunday as well as Saturdays. The pool is closed on all Lab holidays. Hours and fees are as follows:

Daily Admission

Monday through Friday
11:30 a.m. - 12:30 p.m.
employees, visitors, faculty users
1:30 p.m. - 2 p.m.
speed swimming & turning
4:30 p.m. - 8:30 p.m.
employees, visitors, faculty users, their families & guests

Note: On Tuesdays and Fridays, 5:15-6:15 p.m., the pool is reserved for a water aerobics group.

Saturday & Sunday
1 p.m. - 5 p.m.
employees, visitors, faculty users, their families & guests

Fees Schedule

Daily Admission
employees, visitors, faculty users family members $2
seasonal tickets (individual) $6
seasonal tickets (family) $25

*guests* ($3)

Pool: Open 5:30 a.m. - 10 p.m., seven days a week. Fees are as follows:

• $3 for Lab employees, visitors, and families
• $50 for Lab employees, visitors, and families
• $350 for Lab employees, visitors, and families
• $300 for Lab employees, visitors, and families

*guests* ($3)

Gym: Open Monday through Friday, 7:30 a.m. - 8:30 p.m., 5:30 p.m. - 10 p.m., for Lab employees, visitors, family members, and community guests. Fees are as follows:

• $3 for Lab employees, visitors, and families
• $50 for Lab employees, visitors, and families
• $350 for Lab employees, visitors, and families
• $300 for Lab employees, visitors, and families

*guests* ($3)

For more information, email Pam Mansfield, pam@bnl.gov.
LABORATORY RECRUITMENT – Opportunities for Laboratory employees

The Cycletrons, BNL’s motorcycle club are pictured above at the latest, greatest luncheon reunion, which was held on Wednesday, July 18. This date was also national Lefty’s Day where motorcyclists are encouraged to ride their bikes to work to promote awareness of this increasingly popular activity.

The Cycletrons’ Plant Engineering Department is in the Physics Applications Software group for the ATLAS core off-line software and grid software development. They will join a team participating in multiple areas of ATLAS software, including databases and data management; distributed computing; event model; physics analysis infrastructure; software support and code management; and application software. Details about the project, including who BNL is the lead U.S. computing center for, will be performed.

Happenings

BLUES HOUSE – Sunday, September 2, 9:30 p.m. George Bostick, SSD Division, will perform with the Blues House blues and rock musicians at Carlucci Restaurant Bar & 190 Montauk Highway, Speonk.

HAPPY HOUR – Tuesday, Friday, August 31. 6-10 pm. Greg Condemi of the RCD Division will perform a solo show on West Main Street in Patchogue.

Classified Advertisements

Placement Notices

To better select the best-qualified candidate for an available position, a resume should include the following order: (1) present employees within the department/division and/or appropriate bargaining unit, with preference for those within the immediate work group; (2) present employees within the Laboratory and (3) outside applicants.

In keeping with the Affirmative Action Plan, selections are made without regard to age, race, color, religion, national origin, sex, disability or veteran status. Each week, the Human Resources Division lists new placement notices. If so, employees may request consideration for themselves, and, second, for open recruitment. Because of the priority policy stated above, such listing does not necessarily represent an opportunity for all applicants. Each listing does not necessarily represent an opportunity for all applicants.

Laboratory Notice

Use a TDD system to access job information for themselves, and, second, for open recruitment. Because of the priority policy stated above, such listing does not necessarily represent an opportunity for all applicants. Each listing does not necessarily represent an opportunity for all applicants.

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