LNS NEWS

LAB. FOR NUCLEAR SCIENCE

M.I.T. CAMBRIDGE, MA.

April 2, 1987

Vol. 5 No. 4

New Appointments

Peter Binns - formerly a Northeastern Co-op Student -- has been hired at Bates as a Technician A in the Operations Group.

Susan L. Cartwright - has joined the Counter Spark Chamber Group at SLAC in Stanford, California. Dr. Cartwright received her Ph.D. in 1983 and will be working on the warm iron calorimeter.

Don Cyr - joined the Research Support group at Bates as a Technician. Don transferred from the TARA project at the Plasma Fusion Center, M.I.T.

Dayton Fitch is the lastest addition to the Bates Mechanical Group. Dayton previously work at D.J. Fabrication Co.

Jacqueline Granville - has joined the Property Office as Assistant Property Officer. Jacqueline transferred from the Personnel Department where she worked as an interviewer and recruiter.

Marc N. Humphreys - a Northeastern Co-op Student -- has joined the Computer group as computer operator. Marc is majoring in Electrical Engineering.

James E. Kelsey - has joined the Bates Linear Accelerator Center. Mr. Kelsey is a mechanical engineer who formerly worked for Analog Devices.

Marjory P. Neal - is a Tech A electronics technician working with the Heavy Ion Group.

Larry O'Brien - formerly at Northeastern Co-op student -- has joined the Bates Operations group as a Chief Operator.

Victor I. Polyak - has joined the Bates Linear Accelerator Center as an AC Power Engineer. Mr. Polyak is from Newton.

Zdenek Radouch - has joined the Bates Linear Accelerator Center as a Real-Time System Programmer. Mr. Radouch works with the Controls Group focussing on complete conversion and updating of the linac control system to computer rather than manual control.

Boleslaw Wyslouch - has joined the Electromagnetic Interactions Group at L3 in Geneva, Switzerland. Dr. Wyslouch works with the Muon Chamber Group.

Personnel Changes

Dick Ackerson moved from the Electrical Group to the Physical Plant Group as Maintenance Supervisor.

Ignacio Diaz has moved from the stockroom into the Mechanical Engineering group for training as a Vacuum Technician.

Dave Kelley has left the Mechanical Group to work with the LNS Property Office.

Barbara Morris has moved from campus to Bates where she will continue her fine work in the stockroom.

Recent Publications

"Quark exchange in nuclei and the European Muon Collaboration effect," Pervez Hoodbhoy and R.L. Jaffe, Physical Review D, Vol. 35, no. 1, January 1, 1987.

"Inclusive Pion Double Charge Exchange in ^{4}He," E.R. Kinney and J.L. Matthews, et al. Physics Review Letters, Vol. 57, no. 25, p. 3152, December 22, 1986.

"Precision Muon Detectors in the TeV Region," U. Becker, M. Chen, M. Fukushima, H. Rykaczewski, and S.C.C. Ting, et al. Reprinted by North-Holland Physics Publishing from Nuclear Instruments and Methods in Physics Research A253, p. 15, 1986.

"Electroexcitation of M4 transitions in ^{17}O and ^{18}O," W. Bertozzi, J.M. Finn, F.W. Hersman, C.E. Hyde-Wright, M.V. Hynes, J.J. Kelly, M.A. Kovash, S. Kowalski, R.W. Lourie, B. Murdock, B.E. Norum, B. Pugh, and C.P. Sargent, et al. Physical Review C Vol. 34, no. 4, p. 1214, October 1986.

"Measurement of the Reaction ^{16}O (π^{+}, π^{0}p)," S. Gilad, S. Hoibraten, W.J. Burger, G.W. Dodson, L.D. Pham, R. Redwine, et al. Physical Review Letters, Vol. 57, no. 21, p. 2637, November 24, 1986.

"Strange Stars," Charles Alcock, Edward Farhi, and Angela Olinto, The Astrophysical Journal, Vol. 310, p. 261, November 1, 1986.

"The Production of Decay of Tau Leptons," the Mark J Collaboration, B. Adeva, et al. Reprinted by North-Holland Physics Publishing from Physics Letters B, Vol. 179, no. 1,2, October 16, 1986.

"The Physics and Astrophysics of Strange Matter," Edward Farhi, Comments Nucl. Parts. Physics, Vol. 16, p. 289, 1986.

"Strings on a Group Manifold, Kac-Moody Groups, and Anomaly Cancellation," Jouko Mickelsson, Physical Review Letters, Vol. 57, no. 20, p. 2493, November 17, 1986.

NOTEWORTHY NOTES

Dr. Stuart Gazes, a former graduate student with the Heavy Ion Group, recently received the Presidential Young Investigator award from the National Science Foundation. The awards, which went to 200 engineers and scientists nationwide, fund research by faculty members near the beginning of their careers. Dr. Gazes is studying the dynamics involved when two atomic nuclei undergo a collision. He hopes to understand the way in which energy and momentum are dissipated when a nuclear collision occurs.

Dr. Louise Dolan, a former graduate student with the Center for Theoretical Physics, was the 1987 recipient of the Maria Goeppert-Mayer Award for her work on the theory of elementary particles. (Cern Courier, March 87)

NEW COPY MACHINES

The Laboratory purchased two Xerox copy machines, a Model 1075 and 1038. The Model 1075, the larger of the two, is capable of doing 70 copies per minute, double-siding, collating, and stapling, and has an automatic feed. The machine is located in 26-528. Users must be assigned a user number to activate the copier. Numbers are assigned by the LNS Fiscal Office, 26-519.

The Model 1038 is a smaller machine without all the automatic ability but it is unique in that it will copy up to 11" x 17" in size, has variable reduction and enlargement from 64% to 156% in 1% increments and excellent quality. The machine is located in Drafting, 26-529.

--Bob Calileo

R&D FUNDING FOR BATES APPROVED

The first year of R&D funding for the proposed storage ring at Bates has been approved. An Architectural Engineering firm, United Engineers and Constructors, has been chosen to aid the Bates staff in the formulation of an advanced conceptual design report.

HEAVY ION GROUP READY FOR FIRST RUN OF E802

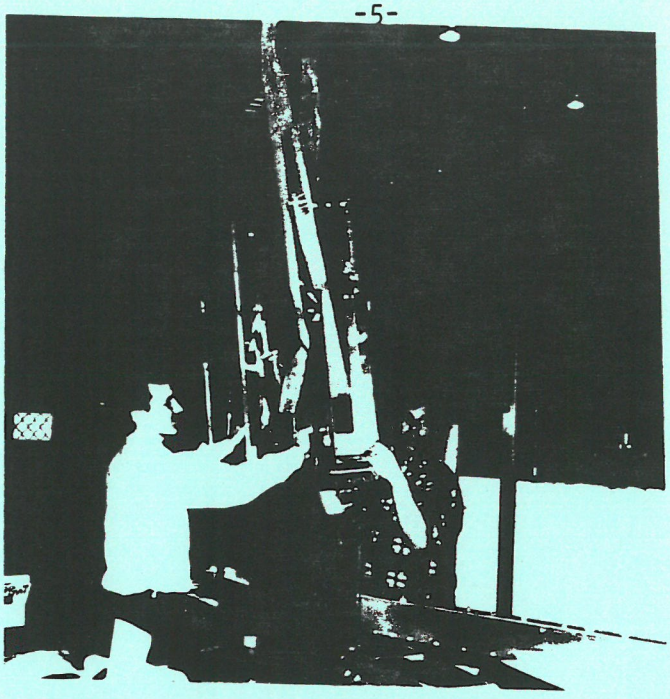
The Heavy Ion Group, under the leadership of Prof. Lee Grodzins, is currently involved in the first run of E802, a collaborative experiment which is underway at Brookhaven National Laboratory in New York. Currently, there are programs at only two places in the world, CERN and BNL, that are studying heavy ion collisions at these energies. E802 is the first major experiment to be set up at BNL. This international collaboration consists of about 50 scientists from countries including Japan, Holland, China, Greece, Argentina, and Bolivia. The first run will begin on April 6 for a period of two weeks, and an additional major run is planned for the fall.

A spectrometer has been built to measure primarily protons, pions, and kaons that are emitted following the collision of a projectile nucleus with targets ranging from copper to lead. It is expected that maximum baryon density will be created when the nucleus stops in the target, and that very high energy densities and temperatures will be reached. It is conjectured that perhaps a new state of matter composed of deconfined quarks and gluons might be created at these high densities.

Beams of 15 GeV/nucleon silicon will be used; but it is uncertain whether silicon is a large enough projectile to create a large enough composite system to reach the phase where quarks and gluons are not confined within the nucleons. Consequently, a booster synchrotron is presently under construction at BNL that will allow acceleration of beams as heavy as gold. Expected time for the gold beams is 1990.

The MIT responsibility has been to build the drift chambers and design the bending magnet for the experiment. Both the mechanical construction and electronics are state-of-the-art designs. Mechanical construction has been directed by George Stephans, electronics have been directed by Bob Ledoux, and the software for tracking reconstruction has been guided by Steve Steadman and Dave Woodruff. Marjory Neal has been responsible for almost every phase of construction of both the chambers and the electronics. She and the group's 8 graduate students have been working night and day for the past year on such tasks as the 7 thousand wires which were individually strung by hand for the drift chambers. Bernie Wadsworth, with help from Dick Lanza, designed the trigger supervisor for the experiment. An important contribution to the project has also been made by the group's 3 UROP students.

--Stephen Steadman



Left to right, Bob Ledoux and Brian Cole constructing equipment for E802 at Brookhaven National Lab.

DEAN'S ADVISORY COMMITTEE MEETING

The Dean's Advisory Committee meeting will be held April 2, 3, and 4. Committee members this year are: Eric G. Adelberger, Edward A. Knapp, Tsung Dao Lee, Ben Mottelson, John Peoples, Nicholas P. Samios, Roy Schwitters, and Erich W. Vogt, Chairman. The Friday and Saturday review of physics will be held in the Kolker Room beginning at 9:00 am on Friday and 8:30 a.m. on Saturday.

SARGENTFEST

A SARGENTFEST was recently held to honor Phil Sargent who is retiring after 33 years at M.I.T. Phil's work covered the period of intense use of electron beams to probe the nucleus spanning the decade of the forties well into the eighties. His work was not parochial but had its effect throughout the international community of nuclear physicists. This was evidenced by the turnout of people at the 'fest on March 14, 1987. It began with a mini symposium including talks by Kees deJager (NIKHEF), Bernard Frois (Saclay), Dirk Walecka (CEBAF), Jake Haimson (Haimson Research Corporation), Larry Cardman (University of Illinois) and from MIT, Bill Bertozzi, Stan Kowalski, Ernie Moniz, and Bill Turchinetz. This was followed by a banquet at Walker Memorial Hall at which a gift of an automatic sailboat steering device was presented to Phil along with several other gifts of accolades and mementos.

--William Lobar

The 1986 PETER T. DEMOS prize has been granted to DOUG BECK. This is an annual award given by the Bates Users Group to an outstanding graduate student at Bates.

NOTEWORTHY NOTES FROM BATES

Robert Redwine was married to Jacqueline Hewitt, an MIT postdoc, who is presently working at Haystack, on November 22, 1986.

"Once a physicist, always a physicist" aptly describes Michel Garcon who sent out the following announcement:

Discovery of a New Particle

by Jacqueline Garcon and her assistant Michel on January 11, 1987

Mass: 3.520kg (1.97×10^{30} MeV)

Size: 53 cm

Quantum Numbers: charm and beauty certainly;
others are being investigated.

Name: Kevin

Rose Ann Waite resigned as Switchboard Operator/Receptionist at Bates for personal reasons. Mark Humphrey left Bates to take a position at Eaton Corporation in Beverly. We wish them both the best of luck.

Just prior to Christmas the Bates employees and retirees were each presented with a Bates mug. The mugs were designed and distributed by John Bavineau, Dan Devlin, and Bill Lobar.

Welcome Back -
Dennis Boyden of the Radiation Protection Group after a heart valve operation.
and
John Gostanian in Drafting after an emergency intestinal operation.

Recent Bates Ph.D's

Nasser Kalantar-Nayestanaki (MIT) - "Magnetic Structure of ^{17}O at High Momentum." He is presently working at NIKHEF in the Netherlands.

Douglas Beck (MIT) - "Elastic Electron Scattering from ^{3}H and ^{3}He." Doug has accepted a position at CalTech.

Gordon Cates (Yale) - "Polarized Electrons from GaAs for Parity Nonconservation Studies and Moller Scattering at 250 MeV." He is now working at Princeton.

Bruce Peterson (Univ. of Wyoming) - "Electron Scattering Studies of $^{182,184}W$." Bruce is now at the University of Wyoming.

Special thanks to Bill Lobar for his help and many contributions. Also thank you to Bob Calileo, Judy Gould, Donna Henderson, and Stephen Steadman.

Recently we have received some suggestions for the "LNS News." The suggestions are a Letter to the Editor Column, and interview with a member or members of LNS, and essays or articles from the LNS community. We would like to hear from you. What would you like to see in "LNS News?" "LNS News" is to help us to keep in touch with one another and to share special events that are important to all of us. Please send your suggestions to Jean Flanagan, 26-505.

Jean P. Flanagan, Editor

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