

Department of Physics and Astronomy Newsletter

Fall Semester

State University of New York, Stony Brook

1999

Department External Review

During the 1998/99 academic year, the Department was evaluated by a Visiting Committee consisting of Tom Devlin, (Rutgers) Chair, Jene Golovchenko (Harvard), Robert Hallock (UMass), Robert Kirshner (Harvard), and Noemie Koller (Rutgers). Preparation for the review included a detailed Self Study, led by Paul Grannis. The visitors spent two days at Stony Brook and later submitted a detailed report to Provost Rollin Richmond. The report describes the Department as "...one of the 'jewels' of the SUNY system, responsible in no small part for the reputation and image of the entire University to the outside world." It further states that in spite of substantial budget cuts "...the Department of Physics and Astronomy at Stony Brook is recognized nationally and internationally as a leading center of learning and research ". The Committee recommends that the University make added resources available to increase graduate student stipends and faculty salaries, for building maintenance and for operating costs. It recommends that the Department make added efforts to increase the number of undergraduate majors, and ..."explore the opportunities in (the) new special relationship between the Department and Brookhaven National Laboratory."



Harold Metcalf Named Distinguished Teaching Professor

Long time member of the faculty, former Director of the Graduate Program, and co-developer of laser cooling of neutral atoms (with Nobel laureate William Phillips), **Harold Metcalf** was named Distinguished Teaching Professor by the SUNY Board of Trustees. Hal is the first faculty member in the history of the Department to be so honored. He received the Chancellor's Award for Excellence in Teaching in 1974.

Professor Metcalf has served as advisor to 22 Ph. D. students, numerous undergraduates, and many high school students as well. In the most recent past he established the Optics Learning Center built from private donations with operations supported by the University. He is also the founder and driving force behind our Masters of Scientific Instrumentation program.



A Prize for Hobbs

Professor **John Hobbs** was recently awarded an Outstanding Junior Investigator grant by the Department of Energy. Congratulations!

Welcome New and Returning Students

To the new students, we welcome you and invite you to ask any staff or faculty member for assistance as you get settled. To the returning students, our warm welcome back and wishes for a productive year.

Ulugbek Abdurakhmonov	Tashkent State University	Uzbekistan
Tobias Beetz	Univ Wurzburg, SUSB	Germany
Ilka Bischofs	Univ Wurzburg	Germany
Lisa Bjordal	University Utah	US
Sergey Butsyk	St. Petersburg Univ	Russia
Matthew Carmell	Boston College	US
Benjamin Clasié	Univ Wollongong	Australia
Evan Crocker	SUNY Buffalo	US
Jamil Egdemir	SUSB	US
Pietro Faccioli	Univ. Trento	Italy
Bryan Field	Illinois Inst. of Tech.	US
Abigail Flower	College of William & Mary	US
Eduardo Gomez	Univ Nacional, Centro Universitario	Mexico
Sean Leckey	Mary Washington College, Columbia Univ	US
Jason Lennon	Univ Notre Dame	US
Enju Lima	CUNY, Kyungpook Univ	Korea
Eftychios Matathias	Iowa State, Univ. Thessaloniki	Greece
Frank Muehlbacher	Univ Wurzburg	Germany
Yildirim Mutaf	Bogazici Univ	Turkey
Aggeliki Pollatou	Univ. Athens	Greece
Shawn Pottorf	West Georgia College	US
Ravindra	Hindu College, Univ Delhi	India
Daniel Robles Llana	U Jyvaskyla, Univ Madrid	Spain
Achim Schwenk	Univ. Heidelberg, SUSB	Germany
Diyar Talbayev	MIPT	Russia
Matthew Terraciano	North Carolina St Univ, Appalachian State Univ	US
Ozgur Turel	Bilkent Univ	Turkey
Danny Yap	National University of Singapore	Singapore
Zuxin Ye	USTC	China
Valeriu Ioan Zetochoa	Comenius Univ.	Romania

New Faculty

Prof. [Aaron Evans](#), observational astronomer, arrived on campus on July 1 to join the Department as Assistant Professor. He comes to us from Caltech, where he did his research mostly using the Near-Infrared Camera on the Hubble Space Telescope and the Owens Valley Radio Astronomy Observatory. Aaron is interested in extragalactic astronomy, specifically, phenomena associated with the collisions of galaxies. He joins our Astronomy program which was described in the June 18 issue of the Chronicle of Higher Education as eighth in the nation in per capita research achievements of the faculty.

Prof. [Thomas Schaefer](#) will join the Department in January 2000 as Assistant Professor and RIKEN /BNL Fellow. Though he comes to us from the Institute of Advanced Study in Princeton, he is no stranger to Stony Brook. He was a postdoc here in 1992-1995, before moving on to the Institute for Nuclear Theory in Seattle. Thomas will share his time between the Department and the RIKEN Center at Brookhaven for the next several years. His arrival will bring the number of Assistant Professors in the Department to six.

During the coming academic year we plan to recruit for three more faculty, one in condensed matter theory, one in atomic/molecular/optical physics, and one in neutrino physics. The growing number of outstanding young faculty members adds a strong sense of vigor and vitality to the Department, and represents our bright future.

High School Students and Undergraduates Conducting Summer Research Projects

***Harold Goltz** (Simons' Fellow from Stuyvesant High School) is working with Prof **Robert de Zafra**.

***Dennis LaFosse**, Visiting Assistant Professor, and Prof **David Fossan** are supervising **Oron Frenkel**, an REU student from U.C. Berkeley, while performing and analyzing data from experiments with the Tandem van de Graaf/Linac accelerator in the basement of the Physics Building.

***Victor Kim**, a Stony Brook and REU student about to begin his sophomore year, is working with Prof **Kenneth Lanzetta** on an astronomy project.

*Prof **Luis Orozco** is supervising **Stephen Christe** (REU Program) who is working in laser trapping. Also, Dr. Orozco is supervising **Boris Pecker**, a Stony Brook senior who is working at CERN on an REU fellowship and is assisting in an experiment to make antihydrogen.

***Jemin George** (Wheatly School in Westbury) and **Diana Kulaya** (Westchester) are working with Prof **Ralph Wijers** on topics related to gamma-ray bursts with their eyes on the Intel science prize.

*Prof **Janos Kirz** and graduate student **Barry Winn** are supervising **Rachel Cannara** (REU) who is working on X-ray tomography.

*Prof **Tom Hemmick** is supervising 4 REU students: **Nathan Frank**, **Eugene Torigoe**, **Jonathan Althans** and **Tobin Sparfeld** and one high school student, **Hill Zaiantz**. In addition, the following Stony Brook undergraduates are working with Dr. Hemmick: **Yvonne Glanville**, **Bob Azmoun**, and **Chris Craddock**. **Firat Coskun** (from Clarkson) is also participating in the lab research.

*Prof **Phil Allen** is working with **Rahul Bhargava**

(Wheatly School, Old Westbury), **James Napolitano** (Commack High School) and **Shridatt (James) Sugrim**, Stony Brook undergraduate physics major.

*Working with Prof **Harold Metcalf** are: **Darryl Axelrod** (Plainview/Oyster Bay Kennedy High School and Simons' Fellow), **Sal Barra** (Ward Melville High School, and Simons' Fellow), **Richard Chang** (Ward Melville High School), **Stephanie Lim** (SUNY Albany, REU), **Tina Shih** (Townsend Harris High School and Simons' fellow), **Mike Twardy** (Rutgers University, REU), **Kally Tzezaalididis** (Half Hollow Hills High School West) and **John Yoon** (Ward Melville High School, Simons Fellow).

*Prof **James Lukens'** and Research Faculty **Sergey Tolpygo**, have **Richard Williams** (East Islip High School and Simons' Fellow) designing the lab's web page and assisting with testing of SIS mixers for the National Radio Astronomy Observatory.

*Prof **Paul Grannis** is supervising **Magnolia Caswell-Mackey**, an undergraduate from Principia College in Illinois and REU student. who is working on computer simulations of CP violations in B meson decays.

***Jason Hays** (Georgia State University) is working with Prof **Michael Rijssenbeek** on the development of a light distribution system for calibration of the DZero forward preshower detector.

* **Guadelupe de los Santos**, from Miller Place HS and an REU student, has completed a project with Prof. **Fred Walter**. She examined ROSAT X-ray images of the Hyades cluster, searching for evidence of long-term variability like that seen in the solar cycle. No variability was evident. She is starting a project to characterize the variability of the X-ray emission of low mass pre-main sequence stars in the R CrA association.

Daniel Greenbaum

...graduated this spring with a plethora of honors. He was the University valedictorian and received his physics degree Summa Cum Laude. He was this year's John S. Toll prize recipient and had received earlier recognition as a Goldwater scholar (98); a recipient of a University Recognition award (98), a URECA scholar, a member of the physics honor society, the honors college and the Golden Key Society. He will attend MIT this fall with a Defense Department Fellowship. Congratulations Daniel!



Tina Shih and Sal Barra at work in the Optics Learning Center.

Alumni News

Michael Marmor Class of 1972

Since 1980 I have been on the faculty of the New York University School of Medicine, achieving the rank of Professor of Environmental Medicine in 1992 with a joint appointment in the Department of Medicine since 1994. Although some early post-Stony Brook research in radiological health built on my training in experimental nuclear physics (under **David Fossan's** outstanding mentoring), I eventually found my passion in the field of epidemiology, the study of the distribution and determinants of disease in populations. In 1981 I was part of the team at NYU that first identified and reported to the Centers for Disease Control the unusual occurrence of Kaposi's sarcoma among young homosexual men. This is now known to be one of the manifestations of infection with human immunodeficiency virus (HIV). I have been working primarily on HIV/AIDS ever since. It has been fascinating to participate in efforts to describe, understand and hopefully control a newly emerging disease of such importance. Currently I am principal investigator at NYU on two randomized clinical trials of HIV vaccines, several epidemiologic investigations of HIV, and a study of tuberculosis.

My physics training has served me well, despite hardly having cracked a physics book since leaving Stony Brook in 1971. My years at Stony Brook also were extraordinarily important because it was there I met Gloria Strauss, then a psychology graduate student. Gloria and I celebrated our 25th wedding anniversary on June 11th with our two boys, aged 11 and 13 years. We live in Port Washington, Long Island, where Gloria practices clinical psychology.

My single greatest loss in leaving physics was any professional reason for contact with graduate student colleagues and faculty from Stony Brook since I stopped attending physics meetings. Stony Brook was a challenging and wonderful period in my life. I would be happy to hear from others (e-mail: michael.marmor@med.nyu.edu) and look forward to the June 2000 reunion. (Advisor: **David Fossan**)

Dr. M. and Dr. K. Quader...

from the classes of 1983 and 1984, respectively, write that **Mubina** is involved in clinical and research work in the treatment of cancer patients using radiation at the University of Pittsburgh. **Khandker** is an Associate Professor in the Department of Physics at Kent State University working in condensed matter physics. His current research areas include correlated electron systems, pairing studies at varying densities, BCS-BE pairing in 2D; high-TC superconductivity and general phase transitions. (Advisors: **David Fossan, Gerald Brown**)

Kevin S. Bedell Class of 1979

Dr. Bedell is a Rourke Professor of Physics and Chair at Boston College as well as a Fellow of the American Physical Society since 1993. Before going to Boston College, he was a staff member of the theoretical division at Los Alamos from 1986-1996. (Advisor: Gerald Brown)

Dubravko Klabucar Class of 1986

I am an Associate Professor of Physics at the University of Zagreb, Croatia. I received my Ph.D. in 1986 with **G. E. Brown** as my advisor. Then I went to Germany to Max Planck Institute in Heidelberg as a postdoc. After that, I returned to Zagreb, my home town, to the Physics Department of Rudjer Boskovic Institute. During the period spent there, my research interests gradually turned towards what is still their present focus, namely the Schwinger-Dyson studies of mesons. At that time, I got married and by now have three children. Also, Yugoslavia fell apart during that period and Croatia became independent.

I have been visiting Stony Brook occasionally - in 1990, 1992, 1994 and now in 1999. Each time I was glad to see Stony Brook University advancing in every respect.

Contributions: Thank You!

We send our many thanks to those who have contributed to the Endowment and Education Stony Brook Foundation Accounts so far this year:

Phil Allen	Kevin Bedell	Gerry Brown
Ruby Chen	Xiao-Dong Cheng	Axel Drees
Mauricio Fortes	David Fossan	David Gabor
Fred Goldhaber	Paul Grannis	Fernand Hayot
Barbara Jacak	James Johnson	ChangKee Jung
Peter Kahn	Joo-Sang Kang	Janos Kirz
Tom Kuo	Chin-Mong Leung	Kostya Likharev
Shin Liu	Robert Louri	Jim Lukens
Rumei Ma	Michael Marmor	Oren Maxwell
Kim Kwee Ng	Hans Pirner	Khandker Quader
Mubina Quader	Michael Rijssenbeek	Daniel Rohrllich
Leslie Sage	Edward Shuryak	Peter Stephens
Yasuo Umino	Peter VanNieuwenhuizen	Paul Vaska
Jac Verbaarschot	Robert Warasila	Wu-Tsung Weng
Andreas Wirzba	Shin-Nan Yang	

K2K Experiment: Artificial Neutrino Beam Detected After Passing Through 250km of Earth

On June 19, 1999, 6:42 PM, Japanese Standard Time, the K2K (KEK to Kamioka) Long Baseline Neutrino Oscillation Experiment observed its first neutrino event due to the KEK neutrino beam in the Super-Kamiokande detector, the first step towards the verification of the neutrino oscillation results announced by the Super-Kamiokande experiment in June last year. This is also the first demonstration that a particle that had been produced artificially and traversed 250km through the Earth was detected.

In June 1998, the Super-Kamiokande collaboration reported strong evidence for neutrino oscillation (muon neutrino to tau neutrino) in the atmospheric neutrino data taken with the Super-Kamiokande detector. To confirm this finding with an accelerator-produced neutrino beam, the K2K experiment was proposed which consists of a neutrino beam line, near detector complex inside the KEK laboratory, and a far detector (the Super-Kamiokande detector) at Kamioka, 250 km away from KEK.

In the K2K experiment, the neutrino beam generated by the KEK proton synchrotron accelerator is aimed at the near and far detectors, which are carefully aligned in a straight line. Then, by comparing the neutrino events recorded in these detectors, we can examine the neutrino oscillation phenomenon. For example, if muon neutrinos oscillate into tau neutrinos on their way to Kamioka from KEK, the number of muon neutrinos observed in the Super-Kamiokande detector will be much smaller than the number expected without oscillation. It would appear that muon neutrinos have "disappeared".

The Stony Brook Super-Kamiokande/K2K group is composed of Professor C. K. Jung who is a Co-spokesperson of the US K2K collaboration, a senior research scientist Dr. C. Yanagisawa, three research associates Drs. J. Hill, K. Martens and C. McGrew, four graduate students M. Malek, C. Mauger, E. Sharkey and B. Viren, and two undergraduate students T. Kato and T. Raza.

The K2K announcement of the first event received media coverage by NY Times, Newsday, ABC-News.com, etc., with the latter two citing Stony Brook.

C. N. Yang Retires

On May 21-22, 1999 a symposium was organized at Stony Brook to mark the retirement of C.N. Yang as Einstein Professor and Director of the Institute for Theoretical Physics, and to celebrate his many achievements. Professor Yang was Director of the Institute for 33 years.

The stellar cast of speakers and chairs included five Nobel Laureates and a Fields Medal winner. Details of the program and copies of the slides from the talks can be found on:

<http://insti.physics.sunysb.edu/itp/symmetries-99/program.html>.

The concluding banquet featured talks by Freeman Dyson, James Simons, and George Sterman for the ITP honoring Professor Yang. Finally, Stony Brook President, Shirley Strum Kenny, announced that the ITP was being renamed the C.N. Yang Institute for Theoretical Physics and presented a plaque bearing the new name, which will be displayed at the entrance to the institute.

Annual Department Convocation
Tuesday, September 7
Harriman 137, 4:00

Reception immediately following on the Physics Patio

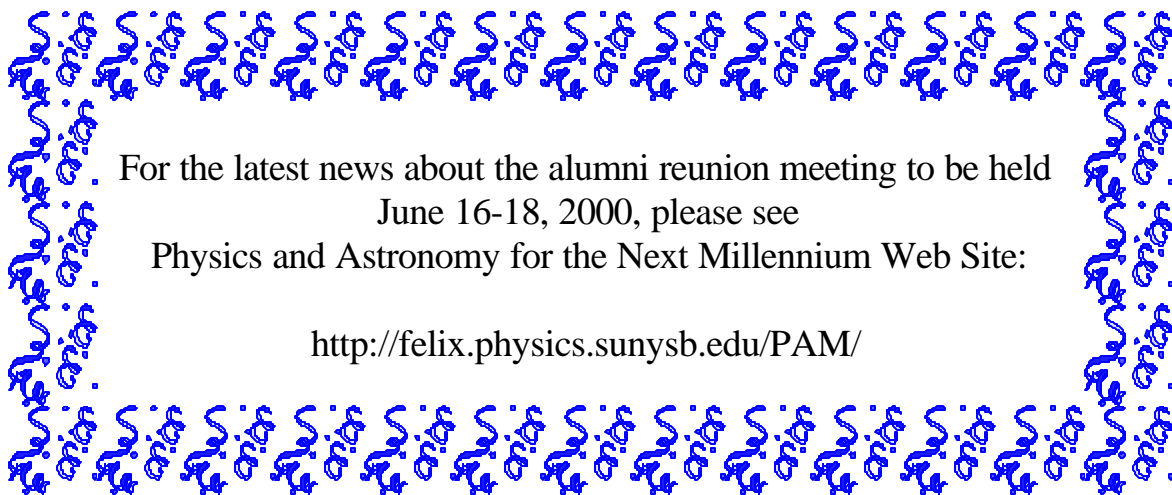
Goodbye to David Fox

Professor I. David Fox was a founding member of the physics department, joining it in 1959 and remaining active until his retirement in 1991. He was influential at developing the physics curriculum and, with his strong interests in chemistry, served as a link to that department. He was the first graduate dean, occupying that position from 1963 until 1969, a period during which most of our doctoral programs were established. He died on May 9 due to heart failure.

Physics and Astronomy Fall 1999 Colloquium Schedule

All talks will be held at 4:15 pm in Harriman Hall. Cookies and coffee will be served starting at 3:45, with the exception of September 7, which will begin at 4:00 with a reception following.

Sept 7	Janos Kirz	Stony Brook	Chairman's Colloquium
Sept 14	Raymond Damadian	FONAR Corp.	(Sir Run Run Shaw Lecture)
Sept 21	Stephen Schwartz	BNL	Particle Physics in the Atmosphere: The influence of Atmospheric Aerosols on Climate
Sept 28			
Oct 5	Robert Morse	University of Minnesota	TBA
Oct 12	Joel Lebowitz	Rutgers University	TBA
Oct 19	Darleane Hoffman	Univ. of California, Berkeley	TBA
Oct 26	Alan Boss	Carnegie Institute of Washington	Extrasolar Planets
Nov 2	To Be Announced	TBA	TBA
Nov 9	Serge Haroche	Ecole Normale Superieur, Paris	TBA
Nov 16	Lee Smolin	Pennsylvania State University	TBA
Nov 23	To Be Announced	TBA	TBA
Nov 30	To Be Announced	TBA	TBA
Dec 7	To Be Announced	TBA	TBA



For the latest news about the alumni reunion meeting to be held
June 16-18, 2000, please see
Physics and Astronomy for the Next Millennium Web Site:

<http://felix.physics.sunysb.edu/PAM/>

Newsletter editor:
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We Are Interested In Hearing From You!

Name : _____ Preferred address: Home _____ Office _____

Workplace: _____ Home Address: _____

Position: _____ Address: _____

Address: _____ Home Telephone: _____

Office Telephone: _____ Email address: _____

If you would like to tell us about yourself, we'd like to listen! What you are doing, your family and activities, any thoughts about your past Stony Brook experience, etc. (please continue on reverse side to provide more information).

Can we print this information in a department newsletter? yes no

Physics and Astronomy for the Next Millenium (PAM) June 16-18, 2000 PAM Meeting at Stony Brook

I am interested in attending the meeting; please keep me informed _____

We are eager to hear about your intentions of attending and any suggestions you might have regarding the meeting's organization; you can email us at graduate@physics.sunysb.edu. The agenda (not yet final) will include plenary sessions with invited talks from faculty and alumni in various areas of physics, and parallel topical sessions organized by the 7 principle research areas (Particle Experiment; Particle Theory; Nuclear Experiment; Nuclear Theory; Atomic, Molecular, and Optical Physics; Condensed Matter Physics; Astronomy and Astrophysics). Tours of the department and the campus will be available. The main theme is, *what have alumni and faculty been doing recently, and what do we all think we want to do next?*

Tentatively the schedule is: Friday: June 16, 2pm: Conference opens
Saturday: June 17 (banquet and entertainment in the evening)
Sunday: conference ends at 2:00pm

Solicitation Form

I would like to contribute the following gift to:

Physics Education Account 264100 for scholarships: _____

Physics and Astronomy Endowment Account 362390: _____

Silver Sponsor of the PAM Meeting (\$200), account 264100 _____

Gold Sponsor of the PAM Meeting (\$500), account 264100 _____

Please return to: