Physics and Astronomy

Michigan State University Summer 2002

In This Issue

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Newsletter

MSU Physics and Astronomy Department

A Letter from the Chair

Dear Friends

of the Department of Physics and Astronomy,

In front of you is the newest edition of our newsletter, and there are many outstanding news items to report.

First and foremost is the fact that we have a new home. In early March we began moving into the Biomedical and Physical Sciences Building, and now this move is substantially completed. We share our new building with the departments of Physiology and Microbiology. The building is connected to the existing Chemistry and Biochemistry buildings, forming the core of a new science complex on our campus. Perhaps most important for our department, the new building is now right across from the cyclotron lab, making it much easier for the different research interest groups to interact.

We now have outstanding teaching and research facilities and have begun to hire additional faculty to take advantage of these facilities. The first two new arrivals are Profs. Kirsten Tollefson, a particle physicist, and Carlo Piermarocchi, a condensed matter theorist. And just before we moved into the new building, Prof. Steven Zepf joined our astronomy faculty.

Retiring from our faculty will be Prof. Ed Kashy and Prof. Sue Simkin, both of whom have given a lifetime of dedicated service to MSU. But, as with all driven people, don't expect them to just slip away. They still have big plans. Ed continues to work on the lon-CAPA teaching project as well as the modernization of our lecture demonstrations, and Sue has just taken on the duties as the editor of a major astronomy journal.

Several donations and endowments have helped us to establish fellowship awards for undergraduate and graduate students, which will help our recruiting efforts.

More exciting news is on the way. Just this spring, we celebrated the inauguration of the Institute for Quantum Science, and the condensed matter group is ready to take advantage of it. Late this year, we expect the completion of the office wing addition to the cyclotron laboratory. And early next year should see the first light from our SOAR telescope in the Chilean Andes Mountains. The nuclear physics group, with backing from all levels of the University administration, continues in their quest to attract the $900 Million RIA project to MSU, and hopefully we will hear good news soon. And finally, we are in the process of creating joint hires in the interdisciplinary interface areas between our department and Chemistry and Biochemistry, allowing us a deeper connection to the life sciences and in particular the Michigan Life Science Corridor initiative.

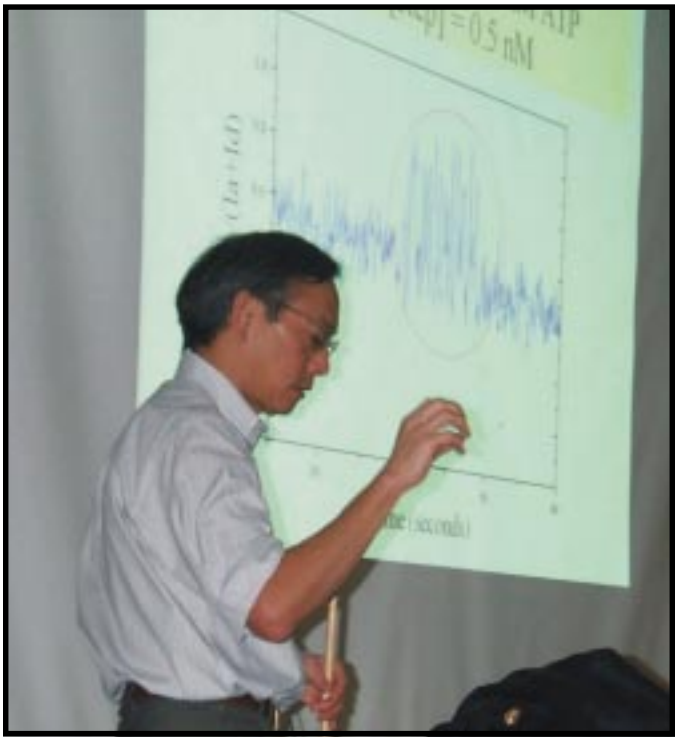
Best wishes

Wolfgang Bauer

Department of Physics and Astronomy

Distinguished Lecture Series

The Physics and Astronomy Department, as part of the continuing Distinguished Lecturer Series, hosted Nobel Laureate Steven Chu, Stanford University, during Fall Semester 2001. Professor Chu received the Nobel Prize for Physics in 1997 "for development of methods to cool and trap atoms with laser light." A luncheon in the NSCL atrium and a dinner at Kellogg Center before the talk allowed students and faculty to visit with Dr. Chu.



Dr. Chu during his Lecture on Laser Trapping

Previous speakers in this series include William Phillips, NIST (Nobel Prize in Physics 1997), T. D. Lee, Columbia (Nobel Prize in Physics 1957), J. Robert Schrieffer, NHMFL (Nobel Prize in Physics, 1972), Joseph Taylor, Princeton (Nobel Prize in Physics 1993), and Leon M. Lederman, ITT (Nobel Prize in Physics, 1988).

Steven Chu meeting with students and faculty at a luncheon in the NSCL atrium before his lecture.

Honors Mentionable

Congratulations to Faculty, Staff, and Students in the Department who have received these Awards and Honors recently:

Gary D. Westfall has been honored with the MSU Distinguished Faculty Award. His discovery of the disappearance of flow has been one of the most significant research results to emerge from the National Superconducting Cyclotron Laboratory at Michigan State University, leading to new insight into the nuclear equation of state. Dr. Westfall is an excellent teacher of physics and astronomy and has written an introductory textbook in physics; he has introduced numerous students to research in his field, supervised thesis work, and guided them to successful careers.

Department of Physics and Astronomy Awards for 2001/2002: Bruce Ver West Outstanding Junior Award to **David J. Oostdyk**; Thomas H. Osgood Outstanding Senior Award to be shared by **Lynn R. Carlson** and **Joseph M. Welsch**; Best Teaching Assistant Award to **Susan H. Musser**; Sherwood K. Haynes Outstanding Graduate Student Award to be shared by **Erik J. Tryggestad** and **Sergei Vrashdin**; Best Graduate Teacher Award to **Martin M. Berz**; Outreach Award to **Darlene Salman** for Science Olympiad, MAAPT Conference, and MMPA; Distinguished Staff Award to **Sandra L. Teague**; Thomas Kaplan Award to be shared by **Andrew J. Rader** and **Sergei Vrazhdin**; Thomas H. Osgood Awards for Excellence in Teaching to **Hendrik Schatz** and **Horace A. Smith**. **Nicholas Kreucher** is a Student Employee of the Year Finalist.

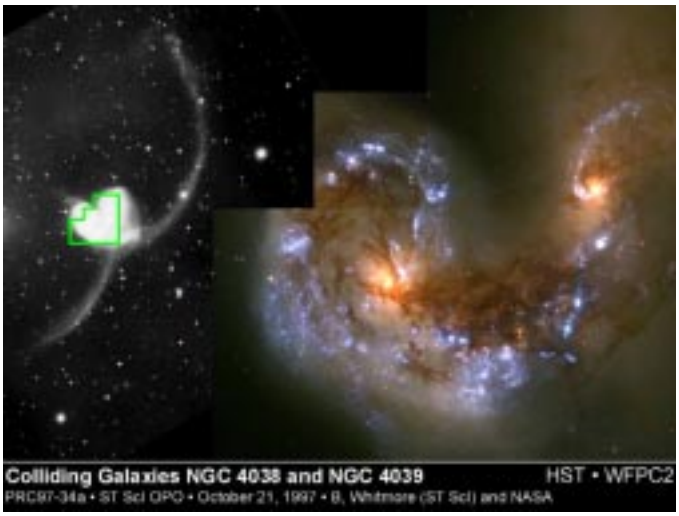
State event supervisors at the **Science Olympiad,** Saturday 27 April 2001, included **Scott Pratt**, **Hendrick Schatz**, **Walter Benenson**, **Darlene Salman, Jane Repko**, **Jack Bass**, **Ed Loh**, **Dave Batch**, **Michael Thoennessen**, **Jules Kovacs**, and **Gary Westfall**. Thus our department provides about 20% of all event supervisors. Outstanding! There are many people that work behind the scenes to make these events a success; **Mark Olson** put in many hours of support, and the guys in the machine shop also provide lots of valuable help. Thanks to all of you for doing your part in making this event the success it is. ▯

Meet Stephen Zepf

Stephen Zepf joined the astronomy group in the Department in July 2001. He was previously on the faculty at Yale, and before that was a Hubble Fellow at UC Berkeley, a postdoc at Durham (England), and received his PhD at Johns Hopkins in 1992. Steve Zepf's research focus is the formation and evolution of galaxies, which is one of the central challenges in modern astronomy and astrophysics. One of the ways Zepf determines how galaxies form and evolve is to study their globular cluster systems, which provide important and observationally accessible fossil records of the history of star formation in galaxies. This is particularly important for elliptical galaxies, which are not forming stars now, but formed large numbers of stars some time in the past. Since most stars are in such galaxies, knowing how and when they form is critical for developing a physical understanding of how the universe evolved into the current complex structures we see today.

Zepf "fell into" work on extragalactic globular cluster systems when he and colleague Keith Ashman wrote a paper predicting that recently created globular clusters would be observed in starbursts induced by galaxy mergers, and that old ellipticals would have bimodal globular cluster systems as a result of their formation in past mergers. The first prediction was confirmed by observations with the Hubble Space telescope less than a year after the paper was published. The second prediction was confirmed not long after through observational work of Zepf's group. They have continued to use these breakthroughs to determine when the major star formation episodes of elliptical galaxies occurred, to study how globular clusters themselves form (an extraordinarily large number of stars bound together in a very small region), and to study the dark matter properties of elliptical galaxies by using line of sight velocities of globular clusters as dynamical probes of the potential at large radii.

Zepf is also engaged in direct searches for the distant high redshift starbursts that make elliptical galaxies, and for signatures of the growth of massive black holes that are found in these galaxies. This work involves combining data from space-based NASA missions (e.g. the Hubble Space Telescope and the Chandra X-ray observatory) and ground-based observational facilities, soon to include the SOAR telescope in which MSU is a partner. One particular aspect of this work in which SOAR will play an important role is that much of the star formation and as well as emission from any black hole present at the center of the galaxy will be embedded in dusty regions. As a result, detailed images in the near-infrared, as provided by the MSU infrared camera, are invaluable for elucidating the physical nature of the progenitors of elliptical galaxies.



Some Spring MS and PhD graduates and their advisors; front: Wolfgang Bauer, Marguerite Tonjes, Zachary Constin; back: Sen Cheng, Michael Davis, Edwin Loh, Susan Simkin, Richard Shomin, Wanpeng Tan, Scott Pratt, Joey Huston, Simona Murgia, William Lynch, William Hartmann, Philip Duxbury, Jan Meinke, and Connie Bednarski

REU Triumph: Students enrolled in the Research Experience for Undergraduates compete with PA faculty in basketball. In closely contested games, REU students nipped Faculty by a bucket twice. This Department of Physics and Astronomy program for undergraduates is the longest running and one of the largest of its kind in the country.

In The Beginning...

Darlene Salman

College Hall (1857-1871)

College Hall, the first building erected at Michigan Agricultural College, was built in 1857. It was also the first building in the country to be erected specifically for agricultural education. During the 60th anniversary celebration, attended by President Wilson and other dignitaries, the north side collapsed as the band started to play the National Anthem. Unfortunately, the foundation rested on a giant tree stump that had rotted over time and was removed in 1918. Beaumont Tower stands on its former location. Physics and astronomy classes were taught there from the earliest days. Physics had a student lab in the basement of College Hall and lectures were taught in the chapel. Heating was by hot air and flues ran in the walls from the basement to various rooms. It never worked and was replaced by wood burning stoves. The flues were never removed and students would gather in the basement to listen in on the faculty meetings.

Chemical Laboratory (1871-1906)
(known as the Chem Fort)

Physics was officially separated from chemistry in 1889 and, with the guidance of P.B. Woodworth, became a separate department. The first annual report was published in 1890. Woodworth was a student of Kedzie and later went to Cornell and University of Berlin in 1902. The picture on the bottom right shows a typical physics lecture. Note that the physics department at MSU was one of the first in the country to allow women into the general physics curriculum. Women did not attend physics laboratory with male students.

About the turn of the century, the campus was lit by kerosene lamps. The physics faculty did not like the smell and the mess of kerosene lamps hanging from the trees and installed electric lighting on the exterior of the building, making it the first on campus to have outdoor lights. Physics was also the first building in the area to install neon lighting about 1912.

The building was built in 1869 for $10,000. This was the first laboratory on campus and was built to take the place of the rooms occupied in the north portion of College Hall. The Department of Physics occupied the north wing of the Chemical Lab. On the main floor there was a lecture room for 100 students, two offices and a large workroom. Physics was to return again in March of 1916.

Physics and Engineering Building (1906 – March 1916)

This building was destroyed by fire in 1916 along with most of the physics equipment. The building stood west of Farm Lane and North of the river. Old Wells Hall was on the west, approximately where the Graduate library now stands. Physics occupied rooms in the basement, 1st and 2nd floors of the west end of the building. Physics had a large lab used for general experiments and smaller labs for other applications. Also in this building were the electrical labs. The Engineering Building was made of slow burning brick and heavy timber roof hoists. It included Mechanical, Civil and Electrical Engineering and Physics. After the fire, physics was not invited to share the new Olds Engineering Building constructed to replace this building. According to the hand-written faculty meeting notes, there was some question about the suspicious nature of the destruction of nearly all of the physics inventory. It seems the administration didn't think the faculty and students tried hard enough to rescue the equipment. After the fire, physics was able to upgrade and replace most of the items they had been wanting for the last few years.

This is the first in a series of articles covering the various buildings that housed the Physics Department. Astronomy and the NSCL will be covered separately. If you would like additional information contact Darlene Salman at salman@pa.msu.edu.

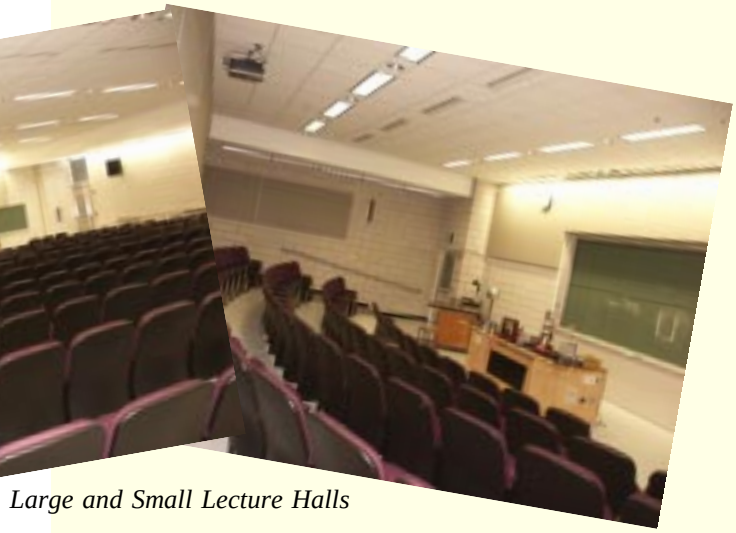
Scenes from the New Home of the Physics

Shop and Lab Wing

Teaching Laboratories

Dedication ceremony reception in atrium as seen from the fourth floor

and Astronomy Department



Large and Small Lecture Halls

Offices and Conference Areas

Interdepartmental Library

Distinguished Visitors

Konrad Gelbke and US Senator Debbie Stabinow visiting in the NSCL atrium

Wolfgang Bauer and US Congressman Nick Smith on his visit to the new BPS building

Hantel Endows Fellowship in Memory of Professor Donald J. Montgomery

The late Lawrence Hantel ('60, '62) and his wife Elizabeth recently donated $300,000 to the Department of Physics and Astronomy to create the Lawrence W. Hantel Endowed Fellowship Fund in Memory of Professor Donald J. Montgomery. Lawrence Hantel received both his undergraduate and Master's degrees in physics from Michigan State University. A golfing scholarship brought Hantel to MSU, but he developed a keen interest in chemistry and physics and never played for the golf team. Lawrence Hantel believed that Professor Montgomery was instrumental in his scientific development and his very successful career.

Hantel was greatly influenced by Montgomery's caring guidance during his student years. Throughout his career, Hantel would often reflect upon the excellent leadership and example shown by Professor Montgomery. Sadly, Lawrence passed away in February of this year at age 62, after a battle with leukemia. One of his last wishes was to show his appreciation of the guidance and mentoring he received from Professor Montgomery and MSU.

The Hantel endowed fellowship was created to provide talented undergraduate students the opportunity to participate in long-term research programs that will augment their preparation for graduate school and the work environment. The goal is to develop in the student the ability to identify a problem, to plan and execute a program to solve the problem, and last but not least, to write up the results in a clear, understandable manner. These skills will help advance awardees in the achievement of their goals in graduate school and on the job.

Through this endowed fellowship, the Hantels have ensured that the legacy of both Lawrence Hantel and Professor Donald J. Montgomery will continue, as it fosters continued scientific development of motivated undergraduate students.

[CNS 2001 Fall Magazine 6-27-01]

SOAR telescope

building and dome are essentially complete. The optical system, without which the completed part is like a gun without a bullet, is scheduled for installation early in 2003. The telescope will undergo engineering tests for the first part of 2003 and should be in full science operation by the end of that year. The most important component of the optical system is the 4.2-meter primary mirror. The primary was cast and ground at the Corning works in upstate New York. It is currently being polished by Goodrich Corporation in Danbury, Connecticut to specifications that will result in a mirror surface of extraordinary precision so that it's images will be of unrivaled sharpness. The Soar telescope will be the premier imaging telescope on Earth."

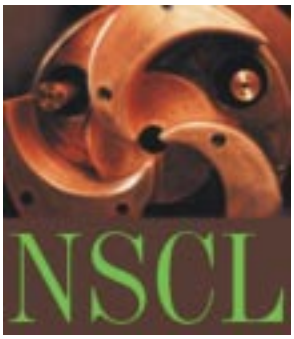
Last September as construction began on the dome

Arrival and installation of the shutter lift during the Andean spring last autumn

Dome nearing completion in March of this year, the Andean summer.

Completed dome amid July snows of the South American winter

President and Mrs. Peter McPhearson donate $10,000.00 to SOAR Project and present a check to College of Natural Science Dean George Leroi during Fall 2002 Homecoming festivities.



NSCL Update

by Orilla McHarris

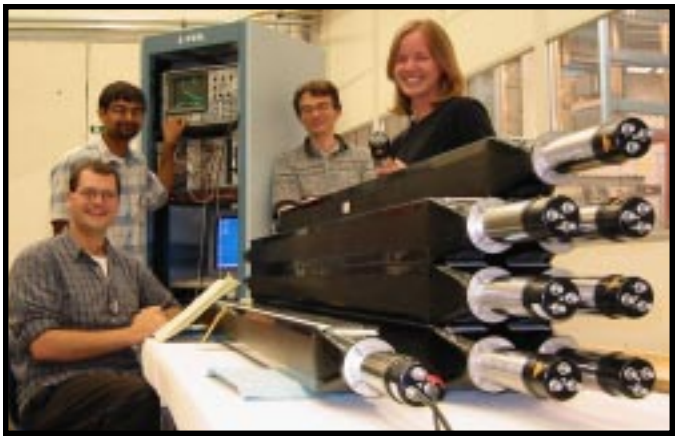
The coupled cyclotron facility is complete. The NSCL's K500 and K1200 coupled cyclotrons have been producing beams for experiments ever since their successful commissioning in June 2001, when the first experiment (reported in a large front-page article in the Lansing State Journal) was done with a beam of nuclei of the very neutron-rich isotope ^{33}Al. Funding for operating the CCF (Coupled Cyclotron Facility) as a national user facility started in November 2001, with a five-year $75 million operating grant.

The first experiment at the CCF utilized the new APEX array (pictured above) of position-sensitive sodium iodide counters to detect and reconstruct the gamma rays emitted from the v/c ~ 0.4 ^{33}Al beam. This array and the recently-commissioned SeGA array of segmented germanium detectors will be the work horses of in-beam gamma-ray spectroscopy at the CCF.

In the subsequent first year of operation, the CCF completed 10 experiments and many new equipment developments. The A1900 fragment separation works exceptionally well (as calculated) and has the highest efficiency of any fragment separator in the world. Experiments in the first year addressed the changes in structure found in rare isotopes and studied the properties of new isotopes, some of which are important for finding the site of the r-process (the astrophysical process by which about half of the heavier elements are created).

The S800 spectrograph has been upgraded and re-commissioned. A digital readout of the focal plane Cathode Readout Drift Counters allows multiple hits to be read simultaneously. The new high-purity gas-handling system for the focal plane and tracking detectors is computer-controlled. The new PPAC tracking detectors, 10 cm × 10 cm in area and less than 1 milligram/cm^2 thick, will read up to 1 × 10^6 counts/second (100-1000 times faster than previous models).

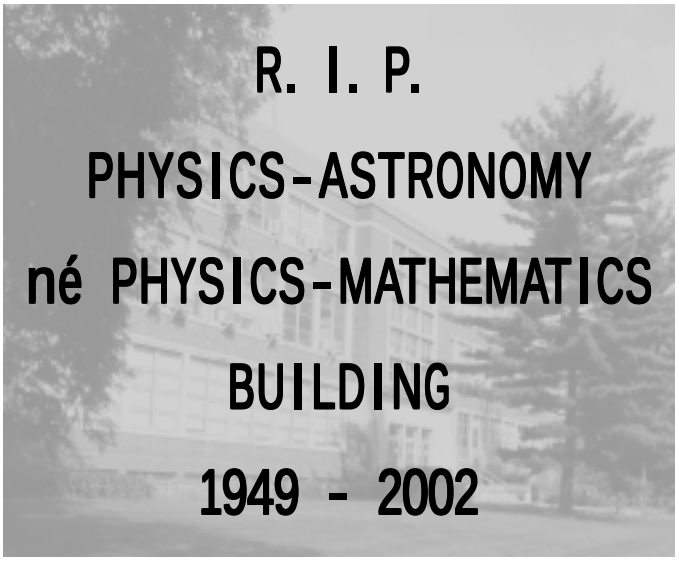
A consortium of ten institutions is providing an opportunity for undergraduates to participate in nuclear physics research. The group, Ball State, Central Michigan, Concordia, Hope, Indiana at South Bend, Millikin, Western Michigan, and Westmont, plus coordinators Florida State and MSU, is building a highly-efficient large-area neutron detector, MoNA (for Modular Neutron Array). Undergraduates have been assembling and testing scintillator bars, and the complete detector will be assembled and used at the NSCL. Several Concordia College students spent summer “vacation” at the NSCL completing their college's share, and in a real show of enthusiasm, completed the work on the 16 bars assigned to MSU/FSU as well! MoNA is funded by nine separate Major Research Instrumentation grants from the NSF to the participating institutions.



The NSCL continues to be actively involved in shaping the concept for an advanced rare isotope accelerator, RIA, which is designated top priority for major new construction in the Nuclear Science Advisory Committee's Long Range Plan. Design studies for RIA are now underway at several labs, and a national research and development plan has been outlined.

As part of this national effort, and also with other possible nuclear science applications in mind, the NSCL accelerator physics group has initiated an R&D program in superconducting radio frequency (SRF) cavities. At left, a superconducting cavity is being prepared in a clean room for testing inside a “dunking dewar” filled with liquid helium. MSU funded the construction of the required infrastructure. Cavity design and testing is being done in collaboration with the Thomas Jefferson National Accelerator Facility in Newport News, Virginia, and INFN's Laboratorio Acceleratori e Superconduttività Applicata in Milano, Italy.

To provide desk space for the additional staff needed to run the coupled cyclotron project, with a little extra space for new projects, a new office wing is being added on the west end of the NSCL building. The former one-story wing is being replaced by a two-story wing, with space added on the north for a new main entrance. ∎



by Julius Kovacs

Amid the words of great expectations expressed for the Biomedical and Physical Sciences Building (BPS) that have been written in these newsletters, local newspapers, alumni magazines, etc., a few last words must be said for the dearly departed-from P-A Building. The Physics and Astronomy Department (with and without astronomers) had continuously occupied the building since July 1949 (the Mathematics Department moved to Wells Hall in the early `60s). In the spring and summer of 2002 the exodus from the building was carried out in orderly fashion, sort of, even while classes were being held in the building in the Spring Semester and the last occupant removed himself and the contents of his desk on July 30. At the time of this writing, only trash, empty boxes, old equipment and furniture destined for salvage are in the offices, labs and corridors. The 10-ton Harvey-Wells electromagnet is still on its tracks in Room 8 in the basement (What will the Psychology Department, rumored to be the new occupants, do with this magnet?).

What great things were anticipated for the Physics-Mathematics building in 1949? We don't have to speculate about this because it is documented. In Volume 18 of the American Journal of Physics, 1950, an 8-page article, starting on page 378, was written about the new structure. What was expected for it and what about the building were sources of pride are clearly indicated in this article. The teaching function was the main emphasis; research seemed to be an add-on. In the basement, where there were no teaching facilities at the time of the abandonment, seven of the largest rooms were designated as teaching laboratories. The first floor likewise had seven teaching laboratories along with the two lecture halls. Five classrooms and four laboratories were designated for the second floor. The third floor likewise had two laboratories (astronomy and meteorology). Laboratories for research appear in the floor plans of the basement area shown in the article but not much is said about them except their availability for various research programs. Needless to say, as the department grew and the need for research space increased, many instructional labs and classrooms disappeared to make way for the growth of research in the department until it became necessary to move to another building, which was done in 2002.

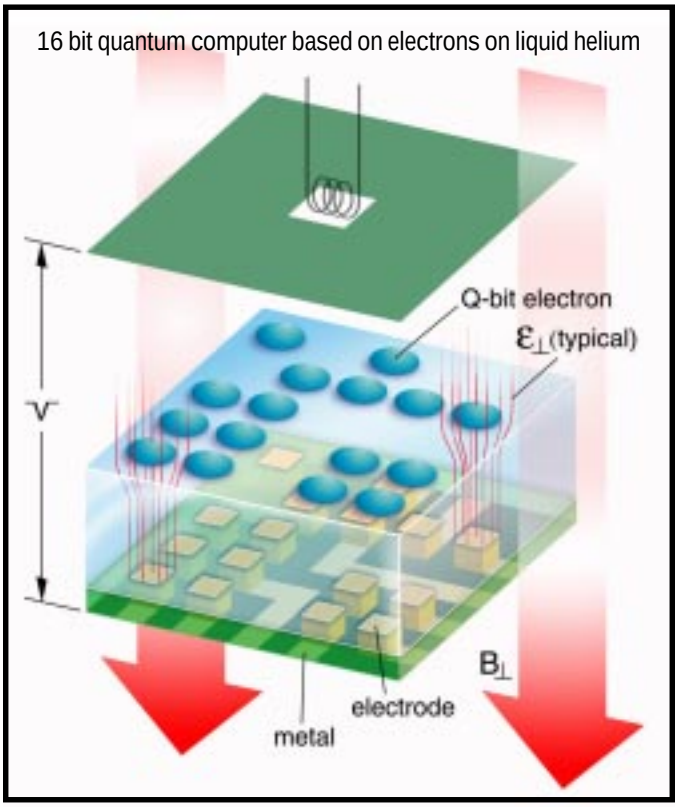
Institute for Quantum Science

by Mark Dykman

The Institute for Quantum Sciences has been recently created at MSU and will focus on the new and rapidly growing area of quantum computing and information processing, provide an environment for scientists and mathematicians to explore the fundamental physical characteristics of quantum systems, implement prototype quantum computers, and develop quantum algorithms for novel applications. Quantum computing promises to revolutionize information processing as a whole, including rapid decryption, large database searches, and other problems that would benefit from the massive parallelism inherent in quantum systems; it opens a qualitatively new and secure way of information transfer.

Quantum computers have the potential to be many orders of magnitude more powerful than existing computers. Their making will require expertise in condensed matter physics, quantum optics, chemistry, and nanotechnology; the IQS will provide an infrastructure to focus research on developing a quantum computer. One of the most promising ideas for a solid-state quantum computer is based on quantum systems with dipolar coupling. Implementation will involve low-temperature techniques, microwave and optical spectroscopies, nanosciences, the theory of atomic-scale dipolar systems in solids, as well as quantum algorithms and architecture development.

The IQS will sponsor an active visiting scholars program, a cross-disciplinary campus seminar and lecture series, national and international conferences on quantum computing, and fellowships for outstanding research students and postdoctoral fellows. The IQS is supported by the MSU Foundation and the Office of the VP for Research. Further information is available at http://www.pa.msu.edu/iqs. Contact: Mark Dykman, Director. IQS Office: BPS 2170, ph.355-9200x2170.



Sloan Winner Goes For the Gold

Hendrik Schatz wants to know where gold comes from, but as an astrophysicist he isn't looking in mines. "The only elements right after the Big Bang were hydrogen, helium, and traces of lithium," says the assistant professor of physics. No carbon, no iron, no gold, no uranium.

The nuclear reactions that power stars and stellar explosions also synthesize elements. One reaction sequence is the rapid neutron capture process, which converts one element to another to create about half of all heavy elements in the universe. But no one knows where among those nuclear reaction sites the process occurs.

One possibility, Schatz says, might be a supernova explosion. In experiments to generate data not available from observing such astrophysical events, he uses the National Superconducting Cyclotron Laboratory (NSCL) accelerator to hurl ordinary, stable nuclei at high speeds against a solid object. Billions of nuclei hit the wall each second, producing new nuclei, sometimes exotic and unstable, which are then sent through a system of magnets designed to throw out as many as possible of the nuclei that aren't applicable to the search for gold.

"Maybe once an hour we find a piece that's interesting," Schatz says. And when they do, they analyze it and compare the data with information from the astrophysical event. It's an expensive way to make gold, he acknowledges, but it allows him to measure properties of some of the nuclei in the process path. Because the reaction sequences in the rapid neutron capture process lie outside the region of known nuclei and because the involved nuclei are unusually rich in neutrons, theoretical models may not predict the properties accurately.

Now Schatz has an Alfred P. Sloan Fellowship-one of 104 awarded this summer-to support his research. "My work links nuclear physics and astrophysics, and many of the astrophysicists I work with are in California, Chicago, Germany, and Switzerland," he notes. The fellowship will allow him to spend more time with those collaborators, meet some equipment needs, and provide additional computing power for the intensive computations that are part of his experimental work.

That work also explores another nuclear reaction sequence involving exotic nuclei. The rapid proton capture process occurs on the surface of a neutron star that, Schatz says, is sucking matter, mostly hydrogen and helium, from a companion star onto its surface. Thermonuclear explosions seen as bursts of X-rays fuse that matter into heavier elements. Schatz models the process that supplies the energy during the explosions to clarify the connection between the X-ray bursts and the neutron star's properties.

"I'm fortunate to have access to the world's best accelerator," he says of the NSCL. "Right now, this is the only place that can make these nuclei."

[Research News, newsletter of the Vice President for Research and Graduate Studies]

Alumni News

by Julius Kovacs

We continue to receive information from alumni/alumnae and report it to you below. Please send us information about yourself that we may include in future newsletters. We have addresses for about 2500 alums (there are many more for whom we lack addresses) so the information below is but a small fraction of those from whom we'd like to get email (kovacs@pa.msu.edu) or paper correspondence. We have over a thousand names on our lists for BA, BS, MS and PhD recipients going back to 1927, and we continue to fill them in. We invite you to browse this column and if you don't see your name, let us know (or if you see any errors in the information about your degree, report corrections to us). To see these pages, get on the Physics-Astronomy home page (http://www.pa.msu.edu), click on the Alumni/News button and scroll down to Graduate Announcements to get to the various buttons that will lead to the pages for our various degrees. Here is information we have collected since a year ago.

Donald A. Hall (BS, '51, MS `54) responded to reading about alumni in the Summer 2001 Newsletter and expressed his enjoyment at reading about happenings in the 40s and 50s. **Alan Strelzoff** (BS, `57) is a Vice President of Embedded System Design at Cadence Design Systems working on new ideas in embedded system design languages that could take the place of Verilog and C. He'd be happy to hear from anyone interested in functional and dataflow programming. **Martha Schwartzmann** (BS, `66) has had a career where she transformed from physicist to engineer to high school teacher to law student. She has been practicing law since 1980 and is currently a research attorney at the Third District Court of Appeals in San Diego. **Tim Murphy** (BS, `69; MS, `77) is School Superintendent in Sandusky, MI. He says he uses his physics training for fun, runs a school system for pay. **Paul Sojka** (BS, `76) is Professor and Chairman, School of ME Research Committee at Purdue University. He started at Purdue in 1983, when he completed his PhD in Mechanical Engineering at MSU. **Michael Bozack** (BS, `75; MS, `77) is on the faculty at the Surface Science Laboratory in the Physics Department at Auburn University. He completed his PhD in Applied Physics at the Oregon Graduate Institute of Science and Technology. **Stanley Radford** (BS, '76) has joined the Physics faculty as Associate Professor at Marietta College in Ohio. **Andrea Pepper** (BS, '75) informed us that she has taken a position as lab supervisor at Georgia Perimeter College. GPC is a system of community colleges ringing the Atlanta area. **LeighAnn Nichols** (MS, `88) is at the University of Nebraska, Lincoln, in the PhD program in Physics working on a project in magnetic force spectroscopy among other research pursuits. **Ronald Kumon** (BS '92) is at NIST, Boulder, CO on a National Research Council Research Associateship. He completed a PhD in Physics in 1999 at the University of Texas, Austin; at NSIT he is modeling acoustic characterization of materials in the Materials Reliability Division. **Erik Hendrickson** (MS, `90; PhD, '94) was elected Chair of the Physics & Astronomy Department at the University of Wisconsin - Eau Claire in January, 2002 for a 4-yr term. ∎

MICHIGAN STATE
UNIVERSITY

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ADDRESS SERVICE REQUESTED

Northwest (above) and southeast (below) views of BPS

New Building Complete

by Marc Conlin

We've been moving since March and are now about 95% complete. The moving has been done by the MSU setup crew, Mayflower Van Lines and department faculty, staff, and students. Various vendors have been brought into to disassemble, pack, unpack, reassemble, and re-certify equipment such as shielded rooms, low-temperature cryostats, electron microscopes, and other delicate equipment. Heavy equipment movers have moved items such as machine tools for the Shop, optical tables, etc.; they also lowered equipment that would not fit in the elevators into the basement through an access way that was included in the building design. One of the last items we moved was the liquid nitrogen tank. The gas is distributed throughout the basement and is available in most of the labs so stand alone tanks can be eliminated except for special uses.

The telephone system has been operating since March at 517-355-9200 and many numbers have been updated in the web based directory at: http://extranet.pa.msu.edu/directory/ The building has a proximity card access system for certain areas and we're also getting used to that, to sharing a building with other departments and being in a building that does not have not the same name as our department. Being closer to the NSCL, Chemistry, Biochemistry, Abrams Planetarium, and Engineering is a big plus.

We are getting ready for the new Graduate Student orientation which starts on August 19th and concludes on the 23rd with a reception using the new seminar room and the observation deck on the roof.

eMail: Conlin@pa.msu.edu Phone: 517-355-9200 Ex 2018