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Newsletter

MSU Physics and Astronomy Department

A Letter from the Chair

Welcome to another edition of our twice-annual newsletter! Quite a bit is happening during this busy time of year. The fall semester has begun with both another large and well-qualified graduate class of close to 30 young physicists and astrophysicists and a third consecutive large class of undergraduate majors. The big attractions seem to continue to be the research programs at the NSCL - especially the growing nuclear astrophysics thrust, the anticipated SOAR telescope, the upcoming Tevatron run, and the active CMP programs in experiment and theory. The NSCL facility is currently spread all over the floor as the two cyclotrons are being coupled together into a unique facility for high intensity radioactive beams - they will be back on the air within the year. The SOAR telescope continues on schedule and on budget for first light in 2002 (we could continue to use help in fundraising for the final third of the $6M obligation)...and the building is slightly ahead of schedule for spring of 2002 (...and fully funded!).

You know, this new undergraduate class will be the first which can be absolutely certain of beginning their programs in our 50 year old building...and finishing them in our beautiful new facility across the river. We hope to teach our first classes during the fall semester of 2002. I'm pleased to note, that due to the kind assistance from an anonymous donor, we will be "moving" the wonderful friezes from the outside of the current building to our new digs. This is due to a new capability from 3M which takes a high-resolution laser scan of the surface and produces a mold which can be made into an exact plastic replica which is light enough to hang on walls (there is a low-resolution "beta" version of the Einstein block in the chair's office). We intend to distribute these icons around the living and teaching areas of the new building as well as to make few-inch-sized versions as gifts.

This fall semester greets three faculty to the classroom (Bollen, Schatz, and Baldwin—see next page). In addition we're searching for a senior Accelerator Physicist, senior and junior experimentalists in Condensed Matter Physics, and one or two junior Astrophysicists. This level of hiring is exhausting for the faculty, but it's always a joy to add new colleagues to our ranks. The recent hires and the current searches are in order to fill out our numbers following several retirements (see next page) and the untimely deaths of Jerry Cowen and Carl Foiles.

Featured in this issue is the very successful program of summer topical conferences in materials science, now in its 6th year. This program has been well received and has been responsible for initiating new research ideas and bringing interdisciplinary groups together in productive summer weeks of talks and discussion. The series is published every year and, along with the highly successful program of visitors in the CMP theory group, promises to continue to generate exciting science.

After 7 years, I'm stepping down as Chairperson of the Physics and Astronomy Department in order to focus on our upcoming experiments at Fermilab and CERN and in order to get back into the classroom. It's been a long run and one which has continued to fill me with gratitude for the active, collegial faculty and our superb support staff. In all areas of our department we're continuing to thrive and exceed expectations in federal support, graduate student performance, faculty achievement, and faculty recruitment. Our achievements reflect a dedication by all to our continued excellence. Of course, none of this works without the amazing support by a good-natured and truly committed clerical staff, our highly skilled shops, our recently organized and expanded computing staff, and teaching support personnel. Personally, I especially want to express my heartfelt gratitude to the support and assistance that I've had over the years from Marc Conlin and Lisa Ruess (who collectively kept me sane and really make the "administration" work) and my associate chairs, Professors Pope, Bauer, and Duxbury (and of course, Kovacs). Finally, I must acknowledge the enormous effort of Professor Wayne Repko - who is single-handedly responsible for the planning and careful attention to detail which will make our monstrous new building into the really amazing facility that it's going to be. I doubt that many have an idea of just how hard Wayne has worked on this project on behalf of all of us - so, now you do! Mention it to him when you see him next and say "thanks"!

Sincerely,

Chip Brock
brock@chip.pa.msu.edu

Alumni News

Julius Kovacs

Since the previous newsletter we have received information from and about some of our alumni which we are reporting to you below. We'd be delighted to include your information in our next newsletter. Send an email to newsletter@pa.msu.edu or a letter to Julius Kovacs at the Department.

To **Jerry Johnston** (BS'62, MS'65, and PhD'67) we extend our hearty congratulations for having been awarded the NASA Public Service Medal given to individuals for significant contributions to the agency's space missions. He was cited for "outstanding leadership in the Chandra Mirror development and its major contribution to the success of the Chandra X-ray Observatory Program". At Optical Coating Laboratory, Inc in Santa Rosa, CA Dr. Johnston managed the program team that applied the reflective coating to the mirrors for the Chandra telescope that NASA launched in July 1999.

Erik Hendrickson (MS'90, PhD'94) has been promoted to the rank of Associate Professor and granted tenure at The University of Wisconsin at Eau Claire. **Liek Wilardjo** (PhD'70) who currently is Professor of Physics at Satya Wacana Christian University in Indonesia received a D. Sc. (*honoris causa*) from the Free University Amsterdam. **Jennifer (Discenna) Snyder** (MS '93) received her doctorate in science education from Western Michigan University and is now on the faculty at the University of Missouri - Kansas City. **Steve Snyder** (PhD'96) is at Science City at Union Station in Kansas City, a science museum which opened in November 1999. Steve and Jennifer were married last year. **Doug Carlson** (MS '94, PhD'95) has recently begun at a new position at MITRE Corporation after two years at Raytheon. He expects to be doing numerical electromagnetic simulations involving determination of radar cross-sections for discrimination of objects. **Bahman Shahid-Saless** (BS'81) is back at Boulder, CO, where he completed his PhD in the area of Gravitation in 1988. After completing his degree he went to Goddard Space Center and then to JPL, where he spent four years and officially retired as a physicist in 1994. In Boulder he and his wife opened an internet company (Earthnet, Inc) and they are planning for much growth. In the summers he has taught introductory physics courses at the University of Colorado for the past five years. Who says you can't go home again? **Robert Pelak** (BS'89 in both physics and mathematics) has been promoted from Postdoctoral Research Associate to Technical Staff Member in the Hydrodynamic Applications Group of the Dynamic Experimentation Division at Los Alamos National Laboratory. **Tim McCaskey** (BS'00) is in graduate school at the University of Maryland as a Graduate

Alumni News continued inside

MICHIGAN STATE UNIVERSITY
Department of Physics & Astronomy
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In and Around the Department

Welcome to the incoming class of new Graduate Students: Mustafa AlHaj-Darwish, Yarmouk University, Jordan; Lloyd Caesar, Andrews University, Berrien Springs; Qinghong Cao, Peking University; Radu Cojocaru, University of Timisoara, Romania; Andrew Davies, Westmont College, Santa Barbara; Dan-Cristian Dinca, University of Bucharest, Romania; Aleksandar Donev, State University of New York, Plattsburgh; Joshua Dyer, University of Illinois, Urbana; Charles Fay, University of Missouri, Kansas City; Nathan Frank, Concordia College, Moorhead MN; Anna Kindt, University of Wisconsin, Eau Claire; Marko Kleine-Berkenbusch, Universitat Munster, Germany; Joseph Kozminski, University of Notre Dame; Kurt Kuseyin, Bogazici University, Turkey; He Lin, Chinese Academy of Sciences; Fernando Montes, Universidad De Los Andes, Colombia; University of Arkansas, Fayettefille; Corey Musolff, Michigan State University; Heather Olliver, State University of New York, Geneseo; Ryan Ringle, Michigan Technological University, Houghton; Stephen Roberson, Florida A&M University, Talahassee; Peter Schury, Michigan Technological University, Houghton; Tatyana Sevastyanenko, Novosibirsk State University, Russia; Divya Singh, Indian Institute of Technology; Yuxing Tang, Peking University; Zhouxuan Teng, Fudan University, China and MI Tech; James Terry, Mississippi State University; Ralf Toenjes, Humboldt Univerisitat Berlin, Germany; Antonio Zambano, Southern Illinois University, Carbondale; Xinya Zhang, Peking University, and CMU Mt Pleasant.

Judy Matthews, Science and Technology Reference Series Editor for Libraries Unlimited had the second and third books in her series published this past summer. Welcome to **Brenda Wenzlick**, new HEP secretary, and **Shawna Prater**, new Astronomy secretary; welcome to new faculty in nuclear physics, Professor **Georg Bollen** from Munich and CERN, nuclear astrophysics, Professor **Hendrik Schatz** from GSI at Darmstadt, and astronomy, Professor **Jack Baldwin** from CTIO in Chile. Department departures include **Jeff Kuhn** for the University of Hawaii, **Suzanne Hawley** for the University of Washington, **Steve Gross** for TRW in Detroit. Recent retirements include **Sam Austin**, **Aaron Galonsky**, **Ed Carlson**, and **Jack Hetherington**. □

url: www.pa.msu.edu/alumni.htm
email: newsletter@pa.msu.edu

The Traverse City Workshops

Michael F. Thorpe

Since 1994, one or two workshops a year have been sponsored by the Department in the general area of *Fundamentals Materials Research*. These workshops have been funded through a grant from the Provost's office. Most of the meetings have been held at the Park Plaza Hotel in Traverse City, which is on Lake Michigan about five hours drive north of Lansing. These workshops bring together researchers from different disciplines that are interested in a single topic. The workshops are informal and the proceedings are published each year by Kluwer Academic/Plenum Publishers in a series of books entitled *Fundamentals Materials Research* with Professor Michael Thorpe as the general series editor. These books contain reviews and discussions of current problems of interest with some emphasis on theoretical and conceptual problems. The publication of this series of books has been supported by the *Center for Fundamental Materials Research* at MSU.

Some workshops that have either been held or are planned, with the names of the organizers are: 1997 Local Structure from Diffraction - S.J.L. Billinge and M. F. Thorpe; 1998 Rigidity Theory and Applications - M. F. Thorpe and P. M. Duxbury; 1998 Physics of Manganites - T. A. Kaplan and S. D. Mahanti; 1999 Science and Application of Nanotubes - D. Tomanek and R.J. Enbody; 2000 Phase Transitions and Self-Organization in Electronic and Molecular Materials - M. F. Thorpe and J.C. Phillip; 2000 Protein Flexibility and Folding - L. A. Kuhn and M.F. Thorpe; 2001 Beyond the Average Structure: from Semiconductors to Proteins - S.J.L. Billinge and M. F. Thorpe; 2002 New Thermoelectric Materials - M. Kanatzidis and S. D. Mahanti.

The organizers of these workshops have included faculty from Biochemistry and Molecular Biology, Chemistry, Materials Science and Mechanics, and Computer Science at MSU. More details about all of these workshops can be found via http://www.pa.msu.edu/~thorpe/.

Physicists have always had wide interests, and there is currently an ongoing debate as to whether physics should remain focused in traditional areas, or whether physics is simply whatever science physicists happen to be doing at the moment. This later view was very apparent at the Centennial Meeting of the American Physical Society in Atlanta in 1999, where almost all branches of science where well represented. The Physics and Astronomy Department at MSU is currently wrestling with this problem, in areas like applied physics and soft condensed matter physics. Applied physics has a strong overlap with engineering, and soft condensed matter physics has come to include topics like the study of sand-piles and avalanches, the chaotic behavior of the stock market, and protein folding.

These workshops have started to focus on some of these areas of soft condensed matter physics in recent years. Leslie Kuhn of the Biochemistry and Molecular Biology Department and Michael Thorpe of the Physics and Astronomy Department at MSU are jointly organizing the workshop in August 2000 on *Protein Flexibility and Folding*. Protein folding is one of the great unsolved mysteries of science. Proteins, which contain many thousands of atoms, along a linear polypeptide chain, fold into a compact three-dimensional structure on a time scale of milliseconds to seconds. This folding occurs reliably and in the same way each time and presents a fundamental problem in statistical mechanics because there is insufficient time for an individual protein to sample all parts of phase space - this would take longer than the age of the universe and is known as Levanthal's paradox. Each folded protein performs a simple function, so that a complex organism like a human has about one hundred thousand distinct types of proteins. The workshop this summer will focus on both theoretical and experimental aspects of protein folding and unfolding and the connection with the intrinsic flexibility of the protein. This is an area where physicists are beginning to have an impact, by setting up simplified models to address some the fundamental questions. There is always an interesting interplay with biochemists who tend to include as much complexity as possible from the start and these attitudinal differences are sure to be reflected at this year's workshop. This workshop is also being sponsored by the newly formed Center for Biological Modeling at MSU. Further details can be obtained via http://www.pa.msu.edu/~thorpe/protein.html.

Conference Participants

Alumni News

...continued from back cover

Fellow and halftime TA. He expects to join the Physics Education Research Group at U of MD and work toward a PhD in the area of physics education. Robert Renninger (BS'72, MS'74) dropped in to visit during the late summer. He is currently employed at Lucent Technologies in Allentown, PA where he has been since 1981, after completing his PhD at the University of Arkansas. He started with the company with its previous name, Bell Laboratories, and will soon be associated with the next spin-off when Lucent divests itself of its microelectronics group. He has, in recent years, been involved with designing CMOS integrated circuits for communication applications. **Stanley F. Radford** (BS '76) also visited this summer, He is currently with General Dynamics Advanced Technology Systems in Whippany, NJ. After leaving MSU he completed a PhD in theoretical particle physics at Wayne State University in 1980 and is a sometime research collaborator of Wayne Repko. **Robert Hatcher** (MS '88, PhD '94) was a High-Energy Physics seminar speaker earlier this fall. He has been working with the MINOS project since he left MSU, first as a postdoctoral fellow at Indiana University until 1998 and since then at Stanford. He is leading the computer simulations of the neutrino beams, determining the sensitivity of the experiments to oscillations between different types of neutrinos. Such "mixing" of neutrino types would be strong evidence for a non-zero mass of the ghostly particles. His wife, **Marina Morrow** (MS '87), is a key member at MC Development in C++. They have a son, Christopher, 3 years old. **Jeff Himm** (PhD '86) has been working with the Navy's diving program for the past nine years. He has developed models of inert gas exchange in rat muscle, and in muscle that contains fat. These models describe the growth and dissolution of bubbles in tissue and in blood and simple models of carbon dioxide levels in closed occupied volumes. He is working with a group trying to develop models of decompression sickness that are applicable across different species. He and his wife, Beverly, have two sons, Isaac and Maxwell. **Bruce Wood** (MS '89) left Lockheed Martin last spring and is now with Cisco Systems in California. He informs us that **Deepangkar Goswami** (MS '85) is also with Cisco but in Bangalore, India. **Jon Slaughter** (MS '86, PhD '88) and **Anna Rosa Lampis** (MS '85, PhD '88) visited the department recently. He participated in a spin polarization workshop held in the department last summer. Jon is currently at Motorola Labs in Tempe, Arizona, leading the magnetic material research effort for the MRAM (Magnetoresistive Random Access Memory) program. Anna Rosa is at Gateway Community College involved with a technology training program for faculty. Their son Alexander is 8 years old. □