
Physics Department News



WESTERN MICHIGAN UNIVERSITY

COLLEGE OF ARTS & SCIENCES

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A note from the Editor:

Welcome back to the Newsletter! After a hiatus of more than a year we are here again. During the 2004-05 academic year yours truly was on sabbatical leave in Berlin, Germany, and for whatever reason nobody picked up the ball to serve as editor. But, we will now try to make the newsletter a regular bi-annual occurrence.

As noted in the previous issue way back in May 2004, we were working to put each issue of the newsletter on the department website (<http://tesla.physics.wmich.edu>).

This has now taken place, so you can find this current issue of the newsletter there as well as the previous issues back to February 2003. In this regard, if you would prefer not to receive future newsletters by postal mail, please drop us a note (my email address is below) and we will take you off the list of persons to whom a paper copy is sent. We could also send you an electronic copy (as a .pdf file) of the newsletter if you prefer that means.

If you go to the department website noted above, you will find that it has been completely revamped. A big thank you for this effort goes to Antony Wills, a former postdoc of Nora Berrah, who took on this formidable task gratis. At the redesigned website you will find detailed information concerning our programs, our faculty, and the current research activities of the faculty.

As always, if you have any feedback concerning the newsletter, e.g., in terms of format, other features you would like to see, or some information about yourself that you would like us to print, please contact me directly. You can contact me by email (john.tanis@wmich.edu), telephone (269-387-4960), or by fax (269-387-4939). Alternatively, you can fill out the "Feedback/Update Reply Form" that is included at the

end of each issue of the newsletter. We would very much like to hear from you.

I hope you enjoy this latest issue of the newsletter!

John A. Tanis, Editor
john.tanis@wmich.edu

From the Chair:

Welcome to the physics department newsletter. There is a lot happening at Western and in this department, probably more than we can get into this newsletter. Nevertheless, I hope this will at least give you a flavor of how things are going around here.



This past summer we dealt with a major asbestos abatement and renovation project in Rood Hall. We had to hold all of our summer classes elsewhere, including the accompanying labs. Fortunately, by working with the maintenance people, we were able to minimize the disruption to our research activities in the basement, and keep our computer network running. There should be a marked improvement in general air handling in that building, and we took the opportunity to get rid of a lot of old junk.

The spirit of philanthropy that is sweeping our area has made an impact on our department as well. We have recently received generous gifts from Donna Nichols and Tom Dickinson (1963 graduate) to augment our scholarships for undergraduate students. In December, I was surprised to receive a call from Jim Lies, the president of a small company in Mishawaka,

Indiana, who wondered if we were interested in some equipment he no longer had use for. He just happened to be visiting a client in Kalamazoo and thought that a physics department might be able to use this equipment, and we happened to be his first call. After checking it out, we gratefully accepted a portable infrared imaging system worth several thousand dollars.

I was recently reappointed as department chairperson for another three years, so I guess folks around here are reasonably happy with how our department is running. Despite continuing difficulties with the budget situation, we were authorized to open searches for two new faculty members last year. That became more of an adventure when president Bailey announced a hiring freeze just as we were conducting on-campus interviews! After strenuously making our case at many meetings, we got exceptions to make two offers. Unfortunately, in part because of the delay, we were unable to fill one of those positions. The good news is that we hired an excellent young experimentalist in nuclear astrophysics, Michael Famiano, whom you can read about elsewhere in this newsletter.

The new "culture of assessment" is also occupying a lot of our time. Arts and Sciences Dean **Thomas Kent** instituted a process called "Compact Planning", which requires us to measure the status and trends in our department using several different metrics, and propose specific initiatives for our future directions. The first round of that exercise was completed early in 2005. This fall, we embarked with the rest of WMU on a comprehensive review of all graduate programs, and are preparing detailed reports on the status and value of our Master's and Ph.D. programs. This process included a visit from an external reviewer, Ani Aprahamian, who until recently was chair of the Physics Department at Notre Dame University. Both of these exercises have given us a clearer view of the

strengths and weaknesses (mostly strengths, I might say) of our department, and so overall are worth the considerable effort.

It is clear, for example, that our research efforts are flourishing because of the fine faculty we have been able to hire over the last several years. We just received permission to search for a replacement for Steve Ferguson, the long-serving head of our accelerator facility, who plans to retire at the end of this coming March. We were able to craft the job description such that we hope to get another active researcher on staff, someone who will further develop the potential of this on-campus lab in an area of applied physics. The fact that we were allowed to make this hire in the midst of continuing staff reductions shows that the administration appreciates the contributions to teaching and research that this department has been making all along.

Paul V. Pancella, Chair
paul.pancella@wmich.edu

What's New at the University

Much has changed here at the university since the last newsletter (May 2004), and much of this information can be found at the university's website (<http://www.wmich.edu>). Here, only a few items are mentioned.

If you haven't visited campus recently, you will notice several new building projects. The most noticeable as you arrive at the West Campus, just east of the intersection of West Michigan Ave. and Howard St., you will find a large new traffic circle. For a number of years, the traffic flow in this area was highly congested, and frequently at a stand still, especially at class changing times. To relieve the congestion, a large traffic circle was built during the summer of 2004 to replace the previous intersections in this area.

Subsequently, the traffic flow seems to be much improved although still heavy at peak times.

Also on the West Campus, between Wood Hall and the Dalton Center, a new chemistry building is currently under construction. This building, which will replace McCracken Hall, is scheduled to open Fall 2006.

Dr. **Linda Delene** was appointed by President Bailey to the position of Provost and Vice President for Academic Affairs at the beginning of the 2004 academic year. Dr. Delene replaced Dr. Daniel Litynski as Provost. Prior to her appointment as Provost, Dr. Delene served as Vice Provost for four years in charge of assessment and academic planning. She has been a faculty member at WMU since 1978 and holds the title Professor of Marketing in the Haworth College of Business.

Faculty Highlights

Our newest faculty member, Dr. **Michael Famiano**, joined the department as an Assistant Professor at the beginning of the Fall 2005 semester. Michael received his B.S. from the University of Michigan in 1994, and his Ph.D. from The Ohio State University in 2001. After receiving his doctorate, Michael worked at the Institute of Physical and Chemical Research (RIKEN) in Wako, Japan. During that time, he worked for the radioactive ion (RI) beam group in developing a detector to measure the short half-lives of exotic nuclei produced in the astrophysical r-process.

Following his work in Japan, Michael spent three years at the National Superconducting Cyclotron Laboratory (NSCL) at Michigan State University. As a nuclear astrophysicist, Michael developed experiments to study the characteristics of exotic nuclei of astrophysical interest. He also developed and conducted experiments to study dense nuclear matter to better understand the

interior of neutron stars. His primary interests include explosive nucleosynthesis processes and the equation-of-state of dense nuclear matter.



Dr. Michael Famiano

Michael and his wife Nikki have two sons and one daughter.

Professor **Arthur McGurn** was recently named as a Fellow of the American Physical Society. Already a Fellow of the Institute of Physics (London), Art joins Nora Berrah and John Tanis of our active faculty, and Emeritus professor Eugene Bernstein in this select group. Each year, less than one half of one percent of the APS membership may be elected to Fellowship by their peers, in recognition of advances in knowledge made through their original research. McGurn was cited for the theoretical advances he has made in describing light scattering and transmission in 1-, 2-, and 3-dimensional structures displaying various degrees of order. Such fundamental understanding is important to the developing field of "photonics", which would replace electrons with photons for transmitting and processing information in circuits and devices.

Chairperson **Paul Pancella** was elected vice president of the WMU faculty senate in March 2004. Early in the second year of his 2-year term, he became the president when then-president Tom Amos unexpectedly passed away in July of 2005. Paul

notes there is a big difference in the amount of responsibility between vice president and president, but other senators, the senate staff, and the executive board have been very helpful.

Pancella was also named to the executive board of the Center for the Study of Ethics in Society at WMU. This interdisciplinary center was established 20 years ago to encourage and support research, teaching, and service to the university and community in areas of applied and professional ethics.

In October, 2004 **Al Rosenthal** appeared in a segment of the television series Proof Positive on the Science Fiction Channel. He was featured as an expert in Optics, investigating claims of a “ghost light” reported at an inactive Michigan lighthouse. With the help of his wife, Judy, he was able to determine a natural source for the light seen reflecting from the beacon at night.

David Schuster, along with colleagues Bill Cobern, Paul Vellom and Renee Schwartz in the Mallinson Institute for Science Education, have been awarded a \$400,000 NSF research grant for a project entitled “Assessing Pedagogical Content Knowledge of Inquiry Science Teaching”. The three-year project will start in April 2006.

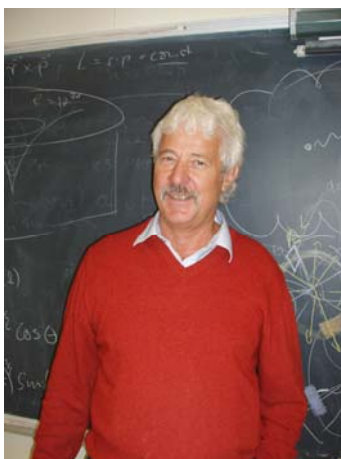
David is involved in another NSF-funded project, namely, a controlled comparison of the efficacy of inquiry- and direct-based instruction in eighth grade science classrooms. The relative merits of the direct- and inquiry-based approaches to instruction continue to be a matter of contention, but thus far there are few controlled studies or comparative evidence. The NSF awarded \$1.9 million over five years for this project, with Bill Cobern as the PI and David as a co-PI.

Also, the preliminary edition of David Schuster’s textbook *Light: Inquiry and Insights*, was published

in August 2005 by Kendall-Hunt and is currently being used in the PHYS 1800 course.

Dr. **Nikolaus Stolterfoht** of the Hahn-Meitner-Institut in Berlin, Germany spent the fall semester 2005 at WMU as a Visiting Professor. Nico, as his colleagues call him, is a world-renowned atomic physicist in electron spectroscopy related to ion-atom collisions and to ion-surface interactions. He has conducted experimental studies and carried out research in laboratories all over the world, and he has given numerous invited lectures at international conferences.

During his stay in Kalamazoo, Nico taught the graduate level atomic physics course (PHYS 6700), which had an unusually high enrollment of 10 students. Additionally, he conducted research on electron interference effects in collaboration with John Tanis, the two having been collaborators for more than a decade. Presently, Nico is setting up an experiment in the WMU tandem Van de Graaff laboratory to study the guiding of charged particles in nanocapillaries. Although he will spend the spring semester at the University of Florida, Dr. Stolterfoht will return to Kalamazoo to carry out these new experimental studies.



Dr. Nikolaus Stolterfoht

Dr. Stolterfoht’s stay in Kalamazoo was supported partly by the physics department, the College of Arts and Sciences, and the Haenicke Institute.

Staff Highlights

Three new postdoctoral research associates have joined the department.

Two postdoctoral research associates have been hired by Tom Gorczyca to calculate decay rates and electronic properties of excited atomic ions. **Jun Fu**, who joined Dr. Gorczyca in fall 2004 after receiving the Ph.D. from Texas A&M University, and **Dragan Nikolic**, who received his Ph.D. in 2004 from Stockholm University, are investigating the dielectronic recombination of highly charged ions along various isoelectronic sequences.



Dr. Jun Fu

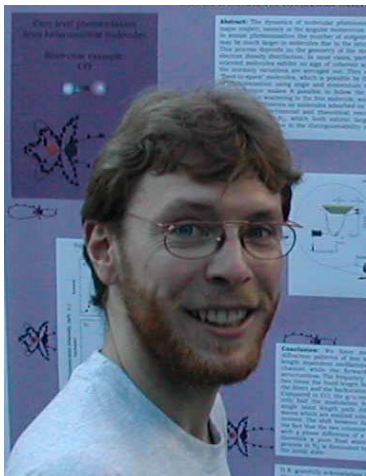
Such recombination processes are important in the understanding of charge-changing process and energy transfer in astrophysical and laboratory plasmas.



Dr. Dragan Nikolic

Dr. Nikolic and Dr. Fu are supported by grants from NASA.

Daniel Rolles joined the group of Nora Berrah in May 2005 and was awarded a Feodor Lynen Fellowship, a German National competition that allows German Ph.D. laureates to extend their experience by working within the group of previous foreign Humboldt awardees.



Dr. Daniel Rolles

Daniel is building an imaging detector to be used in the detection of ionic fragmentation subsequent to inner-shell photoionization of molecules and clusters. This system will be used to conduct electron-ion fragment coincidence experiments in molecules and clusters.

We welcome all of these scientists to our research staff!

ICPEAC 2009

The Department of Physics will host the International Conference on Photonic, Electronic, and Atomic Collisions (ICPEAC) in Kalamazoo from July 22-28, 2009. This is the premier international conference on atomic collision physics with a typical attendance of 500-600 physicists from all over the world. Previous conferences have been held in various locations around the world. This will be the 26th gathering of this biennial event, and as it turns out, Kalamazoo will mark the 50th anniversary of the

conference, thereby making it a special occasion for the conference and a particularly opportune time for us to be able to host it.

Nora Berrah and **John Tanis** are the co-chairs for ICPEAC 2009, with Emanuel Kamber and Tom Gorczyca also serving as members of the local committee. Kalamazoo was selected as the site for ICPEAC 2009 following the presentation of our successful bid for the conference this past summer in Rosario, Argentina the site of ICPEAC 2005. We look forward to hosting the conference as an opportunity for us to showcase the department and the university.

Year of Physics 2005



In connection with the World Year of Physics 2005, two eminent physicists visited WMU to present public lectures in commemoration of Einstein's remarkable contributions in 1905. On October 10, Prof. **Margaret Murnane** from JILA and the University of Colorado, Boulder gave a talk entitled "Can We Make Atoms Sing and Molecules Dance? Using Fast Laser Pulses to Observe and Control Nature". And, Prof. **Timothy Gay**, University of Nebraska, Lincoln, visited WMU on November 21 to speak about "What Makes Einstein So Smart?". In addition to being a first-rate atomic physicist, Dr. Murnane is interested in increasing diversity in physics and in making physics more accessible to the public. Dr. Gay is perhaps best known for his "Physics of Football" lectures at halftime during Nebraska football games. Both lectures were held in the evening and were attended by more than 150 persons, including university faculty and staff from several departments, high school teachers and students, as well many persons from the community and surrounding areas (as far away as Saugatuck!) with interests in science. Following each talk there was a wide

range of questions from the audience. A reception in Bradley Commons after the talks gave those attending an opportunity to meet and speak personally with Profs. Murnane and Gay.

PhysTEC

Drew Isola, our PhysTEC Teacher-In-Residence for 2005-06, has been attending our undergraduate laboratories and working with students and the graduate Teaching Assistants to evaluate and improve learning. We developed a new set of laboratories early in the PhysTEC project to emphasize the process of discovery and to enhance conceptual understanding of the lecture material. They are based on an elicit-confront-resolve approach recommended by science education studies. Drew has learned that in practice these labs sometimes achieve their goals, but in many cases there has been student confusion over secondary issues, confusion that impedes learning of the main topics. He has addressed these issues by re-writing the lab manuals and recommending a process of TA training. His work has been reviewed by some of our PhysTEC faculty and the new lab manuals will be used beginning in Spring '06.



Drew Isola

In addition to regularly meeting with our Secondary Education (SED) majors, Drew has worked to set up an area-wide network of high school physics teachers. At one meeting

during the fall, three of these teachers discussed their favorite demonstrations with our SED students and provided insights into different teaching strategies.

Alumni News

Ali Alnaser (PhD '02) has accepted a position as an Assistant Professor at the Abu Dhabi University in the United Arab Emirates. Prior to that he worked as a postdoctoral research associate at Kansas State University since graduating from WMU.

Rod Price (MA '04) has accepted a faculty position in physics at Kellogg Community College in Battle Creek. During his time at WMU Rod taught some of the department's undergraduate courses including the calculus-based PHYS 205/207 sequence, an experience that should serve him well in his new position.

Michelle Tuel-Benckendorf (MA '04) recently moved to the west coast where she accepted a position at the Everett location of the Boeing Corporation in Seattle, WA. In her new job Michelle is working on the stress analysis of internal components (storage bins, ceilings, partitions, etc.) of commercial airplanes.

Adam Lincoln (BS '04) dropped us a line to let us know how things are going at Wayne State, where he is working on a Ph.D. in Physics. He wanted to express his appreciation for the quality of the education he received here at WMU, reporting that his preparation for graduate work was much more than adequate. Adam summarized: "I can tell that my undergraduate education at Western was even better than I realized." Thanks for the positive feedback, Adam!

Student News

Graduate student **Ileana Dumitriu** was awarded an Advanced Light Source (ALS), Lawrence Berkeley National Laboratory fellowship

for the period Dec. 2005-Dec. 2006 to carry out her Ph.D. research studies into the photodetachment of negative ions. Ileana works in the research group of Nora Berrah. The award was based on a national competition in which proposals are reviewed by a committee composed of LBNL scientists as well as outside users.

Dan Garvin, a junior, was awarded a College of Arts and Sciences Research and Creative Activities Award of \$500 for fall semester 2005. Dan is working with John Tanis on a project to investigate electron interferences associated with the ionization of molecular hydrogen.

Junior undergraduate student **Will Johnson** received a College of Arts and Sciences Research and Creative Activities Award of \$500 in Summer I 2005 to work on research projects in the group of Nora Berrah. He also was awarded a Lee Honors College Fellowship of \$1200 to carry out research at the Advanced Light Source at Lawrence Berkeley National Laboratory during summer 2006.

Diane Strohschein, a junior, was selected as our Presidential Scholar in March 2005, an honor given to the top undergraduate major in each department annually. Then in May, she was also chosen as one of the Young Women of Achievement by the Kalamazoo YWCA. Diane, who is also a licensed pilot and a skydiver, came to us from the aviation program and expects to complete her bachelor's degree in physics in Fall 2006.

Diane was also awarded a College of Arts and Sciences Research and Creative Activities Award of \$500 for Summer I/II 2005 to work with John Tanis. Diane's project involves the investigation of metastable atomic states formed in electron transfer reactions.

Annual Student Awards

Fall 2004

Nathan Nichols Scholarships:

Justin Klein
Diane Strohschein

Paul Rood Scholarship:

John Heredia

Spring 2005

David Carley Memorial Graduate Fellowship Award:

Mohammad Al-Amar

Jacob Dewitt Outstanding Teaching Award:

Jonathan Lighthall
Lucian Undreiu
Subramanian Vilayurganapathy

Leo Parpart Scholarship:

Osama Abu-Haija
Ximao Feng
Lucian Undreiu
Lihua Wang
Huaizhen Zhang

Nathan Nichols Scholarships:

William Johnson
Justin Klein
Diane Strohschein
Luis Webb

Paul Rood Scholarship:

Amy Ohrstrom

Presidential Scholar:

Diane Strohschein

Fall 2005

Nathan Nichols Scholarships:

William Johnson
Justin Klein
Diane Strohschein
Luis Webb

Paul Rood Scholarship:

Dan Garvin
Amy Ohrstrom

Recent Graduates

B.S.

December 2004

Lawrence Burns
Stefan Radek
Trevor Stefanick
Terence Sweet

April 2005

John Heredia
Brian Stroh
Ross Thiele

M.A.

June 2004

Gokmen Olmez
Rodney Price
Michelle Tuel-Benckendorf

April 2005

Samah Abdul-All

Ph.D.

June 2004

Ayman Said

December 2004

Bogdan Danila
Sabbir Hossain

June 2005

Osama Abu-Haija

August 2005

Lucian Undreiu

December 2005

Ximao Feng

Department Roster

Faculty

Nora Berrah
Clement Burns
Sung Chung
Michael Famiano
Thomas Gorczyca
Dean Halderson
Gerald Hardie (Assistant Chair)
Charles Henderson
Emanuel Kamber
Kirk Korista
Arthur McGurn
Paul Pancella (Chair)
Lisa Paulius
Alvin Rosenthal
David Schuster
Nikolaus Stolterfoht (Visiting Professor)
John Tanis
Alan Wuosmaa

Emeriti

Eugene Bernstein
Stanley Derby
Dean Kaul
Robert Poel
Robert Shamu
Michitoshi Soga
James Zietlow

Post-doctoral Research Associates

René Bilodeau
Jun Fu
Dragan Nikolic
Daniel Rolles
Ayman Said

PhysTEC

Drew Isola

Graduate Students

Abunima, Alaa (Qatar)
Al-Amar, Mohammad (Jordan)
Al-Faify, Salem (Saudi Arabia)
Ayyad, Asma (Israel)
Baran, Jamie (Michigan)
Bommana, Sudha (India)
Cassidy, David (Michigan)
Cipri, Robert (Michigan)
Das, Susanta (India)
Dumitriu, Ileana (Romania)
Durren, Michael (Michigan)
Feng, Ximao (China)
Ghannam, Talal (Syria)
Grineviciute, Janina (Lithuania)
Hasoglu, Fatih (Turkey)
Hussein, Moh'd (Jordan)
Kodikara, Ravin (Sri Lanka)
Kodituwakku, Nalaka (Sri Lanka)
Lighthall, Jonathan (Michigan)
Marley, Scott (Michigan)
Olmez, Gokmen (Turkey)
Rai, Buddhi (Nepal)
Senarath, Buddhika (Sri Lanka)
Vilayurganapathy, Subramanian (India)
Vyas, Anjali (India)
Wang, Lihua (China)
Wang, Xue (China)
Wei, Haipeng (China)
Zhang, Huaizhen (China)
Zhang, Yingfa (China)



ICPEAC 2009

**XXVI
International
Conference on
Photonic,
Electronic
and Atomic
Collisions**



**July 22–28, 2009
Kalamazoo, Michigan**

Feedback/Update reply form

Please use this form to update our mailing list, and/or to let us know what you have been doing, and what you would like to see in future newsletters. Fill out any portion of the form below and return to: **Newsletter Editor, Physics Department, 1903 W. Michigan Avenue, Kalamazoo, MI 49008-5252**

Name _____
 first middle last

Home address _____

city state zip

Home phone _____ Email _____

Employer _____ Job title _____

Work address _____

If alumni, degree and year: _____

Tell us more about yourself, and/or what you would like to see in future newsletters:

