

So What's New with You?

We hope you enjoyed this year's edition of **Matter 'n Motion**. We enjoy keeping you informed about what is going on at UMR, but we'd also like to know what's new with you, both personally and professionally. Any information you send will be circulated in the department and, if appropriate, inserted in the next physics newsletter unless you request otherwise.

Please print or type your information, and include your mailing address so that we can update our records. Mail to: **UMR Physics Department, University of Missouri-Rolla, 65409-0640**. Or, if you would prefer, you can e-mail us your comments at [physics@umr.edu](mailto:physics@umr.edu). Thanks for keeping in touch. It's always good to hear from old friends.

Name: \_\_\_\_\_ Phone: \_\_\_\_\_ E-mail: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

Job Title (if appropriate): \_\_\_\_\_

Business Phone: \_\_\_\_\_

Business Address: \_\_\_\_\_

News or Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Department of Physics**  
 University of Missouri-Rolla  
 Rolla, MO 65409-0640

A publication for alumni, friends, faculty, and staff of the MSM-UMR Physics Department

Space Age Moving Day for UMR  
 Physics Alum Sandra Magnus

Last October, UMR Alum **Sandra Hall Magnus** (BS '86) became the third UMR graduate to fly into space—a trip that fulfilled a longtime dream. “It’s not like I saw a film or anything to make me want to become an astronaut,” Magnus said in an MSM-UMR Alumnus article (*Reaching for the Stars*, spring 2002). “No light bulb went off. It’s just something I latched on to. The whole idea of exploring and being on the edge, that whole sense of adventure, it just appealed to me.” Magnus lifted off October 7 on the shuttle Atlantis, joining alumni **Tom Akers** and **Janet Kavandi** as UMR space sojourners.



Sandra Hall Magnus



When Atlantis reached the International Space Station, Magnus operated the station’s Canadarm2 robotic arm during a spacewalk mission to install a 45-foot long, 15-ton truss. The truss forms part of the structural backbone for the station and will provide cooling and support for solar arrays. “The station arm (which transports the spacewalkers) is pretty huge and it’s a pretty exciting piece of equipment to operate,” Magnus told the Belleville News-Democrat last spring. Magnus was also responsible for storage and transfer activities between the shuttle and space station, delivering equipment, mail, food and clothes to the station, and bringing back things that were no longer needed. “It’s kind of like moving a house or small apartment in the space of a few days and keeping track of everything.” One of Magnus’ mentors at NASA is female astronaut, **Shannon Lucid**, who lived for 188 days in 1996 on the space station Mir. The two shared an office at the Johnson Space Center. “She comes from a generation that had to knock down a lot of walls,” Magnus said. “She made it easier for my generation. Hopefully, I’ll be able to make it easier for the next.” *Adapted from a story in the MSM-UMR Alumnus, Fall 2002, reprinted with permission. See “Memo from the Chair” for comments regarding the recent Columbia tragedy.*

<b>Also in this issue:</b>	UMR Students and Alumni: in Press ..... 7
Memo from the Chair ..... 2	Excellence in Teaching Awards ..... 8
Jack Rivers Remembered ..... 2	2002 Degree Recipients ..... 8
Physics Department Scholarships ..... 3	Leaving a Legacy ..... 8
Report from the SPS ..... 4	Bertino: Sweating the Small Stuff ..... 9
Heatherly Professional Degree ..... 4	2002 Dean's List ..... 9
Alumni Notes ..... 5	Ninth Annual Schearer Prize ..... 10
Bieniek Gives Students Big LEAD ..... 5	Prize Winner Sknepnek ..... 10
Hughes Zenor Memorial Resolution ..... 6	Faculty, Staff, and Student Notes ..... 11
Department Honors Alumnus Slusher ..... 6	Homecoming 2002 ..... 11
Frontiers in Physics Colloquium Series ..... 7	What's New? ..... 12



Phonathon  
 2003

More than **160** physics alumni pledged **\$14,523** in donations to the MSM-UMR Physics Department during last year’s fund-raising Phonathon with an average gift of \$88. The department greatly appreciates your generous donations, which goes towards scholarships and helps to support student activities like the Society of Physics Students. “Your support makes a tremendous difference to our department, particularly with the recent economic downturn and budgets tightening across the board,” says **Dr. Paul Parris**, Chair of Physics. “In times like these, a committed alumni base really makes a difference to a department dedicated to providing a high quality education to tomorrow’s scientific leaders.” Your continued support helps us to attract great students and provide them with the resources they need to succeed.

This year, we will begin calling alumni on **February 25**. When the phone rings, please take a moment to share some of your Rolla experiences with a current UMR student, and pledge whatever you can. Taxpayer support accounts for only 40 percent of the university’s revenue, so your contribution is an important part of the department’s total income. Any amount you give is appreciated. It helps make UMR a leader in alumni giving among public universities, increases the value of your degree, and helps the Physics department fulfill its educational mission.

## Ninth Annual Schearer Prize Competition

The Ninth Annual Schearer Prize Competition for Graduate Research took place in December, 2002. The Schearer Prize is awarded from a fund established in the memory of **Dr. Laird D. Schearer**, late Curators' Professor of Physics, who joined the Physics Department in 1971, and served as departmental chair from 1971 to 1977. Professor Schearer, who passed away in 1993 while on research leave in France, had an intense interest in graduate students and their research. The department looks forward each year to awarding the Schearer Prize, which recognizes the best research conducted by UMR graduate students in physics.

This year's competition had two entries, **Abdalla Obeidat** and **Rastko Sknepnek**. Mr. Obeidat is performing his

research under the direction of UMR Physics Professor **Gerry Wilemski** while Mr. Sknepnek has been working with UMR's newest Assistant Professor, **Thomas Vojta**. During a regular department colloquium, they described their research to an audience consisting of faculty, students,



Laird Schearer

friends, and this year's Schearer Prize Committee members, **Ralph Alexander**, **Greg Story**, **Carsten Ullrich**, and **Bob DuBois**. Based on the talks and overall research records, the committee awarded first place to Mr. Sknepnek for his presentation, entitled *Superconducting quantum phase transitions in disordered ferromagnets*, and second place to Mr. Obeidat, who presented *Comparison of experimental and theoretical nucleation rates of water at low temperatures: an equation of state approach*. In making the awards, the Committee was impressed with the quality of the talks and the students' ability to convey the significance of their research. The competition ended on a relaxed note with the participants and members of the faculty enjoying dinner at a local restaurant, another tradition of which the department feels Laird would definitely approve.

### To Contact UMR Physics

If you would like to contact us for any reason, you can reach us by phone at (573) 341-4781 and by e-mail at [physics@umr.edu](mailto:physics@umr.edu). You might also be interested in checking out our web page, <http://www.umr.edu/~physics>.

### From This Year's Schearer Prize Winner Rastko Sknepnek



Rastko Sknepnek

It is a great honor to be the winner of the Ninth Annual Laird D. Schearer competition. I'd like to thank my supervisor Dr. **Thomas Vojta** for his patient guidance on this project and on the hilly path towards my PhD thesis. I thank also our collaborator, Dr. **Rajesh Narayanan**, of the Max-Planck Institute in Dresden, who helped me clarify some subtle points, and the Prize Committee for the opportunity to present my research. And last, but not least, I wish to thank my family and my friends for their unselfish love and support.

I came to UMR in February 2002, following Dr. Vojta, from Chemnitz University in Germany, where I spent two years working on my PhD thesis as a member of the Institute of Physics. I had joined Chemnitz University in May 2000 after graduating from the University of Belgrade, in Yugoslavia, my home country. Although, in the beginning, I was really hesitant about coming to a small town like Rolla, I quickly found it to be a nice place to live, with many friendly people and a really competitive and rich scientific life.

My talk in the competition was based on research I am doing for my PhD thesis. Our research on superconducting quantum phase transitions in disordered ferromagnets was motivated by the experimental discovery in 2000 that at low temperatures certain materials can exhibit superconductivity and ferromagnetism at the same time. This result, which clearly contradicted the general and well established philosophy behind conventional superconductivity, suggested a physically rich mechanism underlying the phenomenon and opened intriguing theoretical questions. We took a bite of that cake and asked how such a state arose, i.e., what the transition to a ferromagnetic superconductor looked like. To be immersed in a problem at the very front of modern condensed matter physics was a tough intellectual challenge, but the scientific thrill and experience I gained were more than worth the effort. I hope in the future to continue work on this and similar problems.

## Physics Department Awards 2002-2003 Scholarships and Fellowships

The following scholarships have been endowed through the generous gifts of the friends of the UMR Physics Department. Scholarships are announced annually at the Harold Q Fuller Undergraduate Research Seminar, held this past year on April 18, 2002. Congratulations to all our Departmental Scholars!

Recipients of the *Harold Q Fuller Scholarship-Loan* were **Travis Yates** of Searcy, Arkansas, and **Ryan Mallery** of Ballwin, Missouri. The \$1,300 scholarship-loan was endowed by the late Dr. Fuller, Chair of the Physics Department from 1948 to 1970 and former Dean of the College of Arts and Sciences, to recognize outstanding achievements among juniors and seniors in physics. One quarter of the scholarship is an interest-free loan that students begin to repay when they start their first jobs.

Recipient of the *Burke H. Miller Memorial Scholarship* was **Bernard Fendler** of Kirkwood, Missouri. This \$500 scholarship was established by the Miller family to commemorate the academic achievements of their son, Burke, who graduated with a bachelor's degree in physics in 1969 and later died during the Vietnam War. The award is for promising and dedicated students in physics.

**Christopher Lloyd** of St. Louis, Missouri, received the *L. E. Woodman Memorial Scholarship*. This \$1,000 scholarship was established by the Woodman family in honor of Dr. L. E. Woodman, Chair of the Physics Department from 1919 to 1948. It is offered to students in physics of good moral character, maintain a satisfactory grade point average, and are in financial need.

The *Charles M. Rice Scholarships* are presented to outstanding juniors or seniors in physics at UMR. They were established by Mr. **Charles M. Rice** (MS '50) to recognize and encourage outstanding effort and achievement in undergraduate physics. Chuck got his MS in physics at MSM in 1950 and was awarded a Professional Degree from UMR in 1966. During his career, he did award-winning work for the US government and later started several successful business enterprises. The 2002-2003 scholarship was awarded to **Joao Sosa** of Shawnee Mission, Kansas.

The *Richard W. Hannum Endowed Development Fund* was established through a bequest by Richard Hannum (PhD '66). The fund is currently used to provide scholarships for outstanding students in Physics. **Joseph Eimer** of Hillsboro, Missouri, received the Hannum Scholarship for 2001-2002.

In addition to endowed scholarships, which are usually awarded to juniors and seniors, the department awards special **Physics Department Scholarships**, funded from the annual **phonathon**, to students who earn a grade point average of 3.5 or higher. This past year, department scholarships were awarded to the following students, who range in academic standing from freshman to senior: **John Zirbel** of Watertown, South Dakota, **Deepak Vaid** of New Dehli, India, **Timothy Ivancic** of St. Louis, Missouri, **Cameron Johnson** of Manchester, Missouri, **Christopher Schwartze** of Vienna, Missouri, **Elizabeth Farrand** of Fair Grove, Missouri, **Charles Williams** of Poplar Bluff, Missouri, **Terence Anderson** of Pilot Knob, Missouri, **Nathaniel Bates** of O'Fallon, Missouri, **Micah Burgdorf** of Florissant, Missouri, **Paul Gholson** of Jackson, Missouri, **Daniel Huhmann** of Tipton, Missouri, **Ryan Kinney** of Gladstone, Missouri, and **Walter Kowalski** of High Ridge, Missouri.

### Endowments: Gifts that Keep on Giving

Through the generosity of friends and alumni, the Department of Physics has been very successful in raising annual support for scholarships, student travel funds, and program enrichment. As you make your annual commitment to the department, however, you might want to consider starting an endowment in your name or in the name of a loved one, so that your gift will still be making a difference when your great-grandchildren enroll at UMR. An endowment to the university will bear the name that you designate *in perpetuity*.

Consider, e.g., the impact of leaving an endowed scholarship or lecture series in your name. With an initial gift of \$10,000 (which may be started with \$2,000 and a pledge of \$2,000 annually over the next five years) you can start a fund from which generations of students will

benefit. The fund will generate approximately \$500 per year initially, and will continue to grow as the principal increases each year. The UMR physics department has several donors that have been adding to their endowment for several years, including endowments established recently by **Ed** and **Mary Sue Sickafus**, and by the estate of **Richard Hannum**.

Endowments may be established with cash or readily marketable securities. Regardless of the amount of the endowment you wish to establish or the methods used to establish it, your investment will have a significant and long-term impact on the Physics Department and on the University of Missouri-Rolla. Please call **Maggie Morrison** or Mr. **Kevin Lindsey** at 1-800-392-4112 if you have any questions or wish to discuss options available to you for giving to the department.

## UMR Physics Faculty Receive Teaching Awards



Teaching Excellence Awardees Story, Waddill, Alexander, Bieniek

This past year, four physics faculty members were honored with *Excellence in Teaching Awards* from the College of Arts and Sciences. **Ralph Alexander, Ron Bieniek, Greg Story, and Dan Waddill** received the award for their outstanding effectiveness in large-enrollment courses. According to Dean Paula Lutz, "The award is designed to honor a group of faculty who make a special contribution to student retention." Our four were part of the nineteen faculty in the College to receive the award, which was initiated this year.



**Bieniek Leads LEAD** (continued from page 5) reluctant to get together and stand up to work at the board in front of everyone. But after a short while, they realized how much they were learning from each other and the occasional intervention of an instructor. It's wonderful to see the dynamics of learning brought to life."

Twenty-three faculty across campus now run LEAD-sponsored learning centers for foundational courses in physics, chemistry, basic engineering, computer science, electrical engineering, civil engineering and English composition. Bieniek notes "The campus is in the midst of a push to enhance active learning and the engagement of students in the learning process. The LEAD program is a major element of that effort. I am very glad to be part of it."

## Congratulations to UMR's 2002 Physics Degree Recipients!

### May 2002

#### Bachelor of Science

Steven Michael Alferink  
Jason James Burnes  
Lewis Matthew Foster  
Charlie Robert Morgan Glaus

#### Master of Science

Benjamin Christopher Eimer

#### Doctor of Philosophy

Liquan An  
Osman Ozturk  
Muzaffer Mustafa Tabanlı  
Srinivasa Lakshminaras Varadharajan

#### Professional Degree

Richart E. Slusher

### December 2002

#### Bachelor of Science

João Da Silva Sosa  
Lea Ann Cozort  
Bernard Joseph Fendler

#### Master of Science

Carmen Marie Doudna  
Jared Franklin Hund

#### Doctor of Philosophy

Kisa Saranganie Ranasinghe

#### Professional Degree

Douglas A. Heatherly

## Leaving a Legacy Through Your Will

A planned gift makes a perpetual statement about your dedication to MSM-UMR. While many may not be able to establish an endowment today, they find that they are able to leave a significant legacy to the university through a planned gift, such as a bequest, life income gift, or life insurance. By making a planned gift, you show your loyalty to an institution that has played a significant role in shaping your future. For more information about giving a planned gift, contact **Judy Cavender** at 573-341-6090 or e-mail her at [judyc@umr.edu](mailto:judyc@umr.edu).

## Alumni Notes:

**Bob Spratt** (BS '58) writes "I am impressed by the work invested in the newsletter and enjoyed reading it. Also enjoyed chatting with the young man who telephoned me."

**Choonbee Tan Zahn** (MS '99) reports "we were blessed with the arrival of our son, **Jacob Zhan**, on November 30, 2001. Jacob weighed in at 8 pounds 13 ounces and was 21-1/2 inches tall at birth."

**Chris Thornton** (BS '90) started his own company, CATCO Technologies, LLC. He married **Pam Porchey** on October 20, 2001, and reports that he is loving married life.

**Jerry Keifer** (Ph.D. '79) has been promoted to the rank of Professor of Physics at St. Bonaventure University. UMR Alum **David DiMattio** (Ph.D. '99) also recently joined the St. Bonaventure Physics Department as Assistant Professor of Physics.

**Dharma Abayarathna** (PhD '89) is a Group Leader at Champion Technologies, Inc.

**Arthur Nickless** (BS '65) tells us that he and his wife Joan now have three grandchildren.

Amateur radio enthusiast **Don Schricker** (BS '74) invites you to visit him on the web at <http://www.qrz.com/w2inq>.

**John Bosnak** (PhD '63) retired from his position as Project Manager with Honeywell in April, 2002.

**Roger May** (BS '76) is owner and operator of telecommunications and internet company ASAP Reps.

**Richard Thom** (BS '67) writes "retired in November 1999 after 32 years with Hughes Aircraft Co. and Hughes Santa Barbara

Research Center, where I was Technical Director and Director of R&D. My wife and I have relocated to Whidbey Island, Washington, where we enjoy traveling when not splitting logs and scraping the moss off our house."

**James Wilcutt** (MS '67) was recently named Head of the Physical Science Department at Arkansas Tech University.

**Jeff Schroeder** (BS '95) writes "the clan continues to grow-I now have three kids with the birth of my son **Zack** in July 2001. Work is always an adventure, and owning three companies certainly keeps me busy. Still lovin' Colorado."

**Osman Ozturk** (PhD '02) has a postdoctoral position at the Chemistry and Biochemistry department at the University of South Carolina-Columbia, where he works on the analysis of the surface of catalysts.

**Dan Otero** (Ph.D '00) designs and implements state of the art treatment methodologies of cancer using external radiation beams for St. Francis Health Center in Topeka, Kansas.

**Harry Drete** (BS '51) has enjoyed his 13 years of retirement. He keeps busy around the home, working on model electric trains and his old Studebaker cars. He belongs to two old car clubs and volunteers at the VA Hospital. He reports that his medical treatments are going well.

### We were saddened to hear ...

**Athel Merts** (MS '51) passed away on December 18, 2001.

**Howard Cole** (BS '79) passed away in January, 2001.

## Bieniek Gives Students a Big LEAD

UMR physics professor **Ron Bieniek** has been named by UMR Chancellor **Gary Thomas** to head a campus wide program designed to enhance active learning and student engagement across the curriculum. As Director of the new Learning Enhancement Across Disciplines (LEAD) Program, Ron is developing a coordinated system of student academic assistance, with the main goal being to "find ways of increasing active student-oriented learning, particularly for students who need some assistance in developing their full potential."

The LEAD program grows out of the very successful Physics Learning Centers which Bieniek initiated eight years ago, and which now serve as a role model for Learning Centers in other departments. Staffed by trained faculty and undergraduate peer instructors, center instructors act as guides who encourage students to take greater responsibility for their learning in an atmosphere of cooperative engagement. Many visitors to the physics learning center remark on the camaraderie that develops when students help students, as instructors roam about the room.



Ron Bieniek



Even students in Prof. **Allan Pringle's** new algebra-based College Physics course use the Physics Learning Center along side students of Engineering Physics. Pringle relates, "At first, my College Physics students were a little (continued on page 8)