

Memo from the Chair

In last year's edition of this newsletter, my "Memo from the Chair" featured comments and observations regarding the tragic events that occurred on September 11, 2001. This year, just as we were going to press with a cover story featuring UMR Physics Alumna **Sandra Hall Magnus**, (BS '86, MSEE '90) we were deeply shocked to learn, along with the rest of the country, of the tragic loss of the crew members of the **Space Shuttle Columbia** over the skies of Texas.

The loss of the Columbia crew provides a sad backdrop to our cover story, which we decided to run in spite of the tragedy, because it underscores the incredible courage and dedication that all the members of NASA's space family exhibit on a daily basis. The mission specialists, pilots, and crew of the NASA space program are heroes of a very high order, for whom the passion for space exploration, the advancement of science, and the celebration of the very best in the human spirit provide the motivation to risk their lives in the performance of their mission. I'm sure I speak for all members of the MSM-UMR physics family when I offer heartfelt sympathy to the families of the Columbia crew, as well as to their colleagues, like Sandy Magnus, members of an extended NASA family to whom the sense of loss must be painfully intense.

The department is extremely proud to offer a program that can contribute to the education and career development of role models like scientist-astronaut Magnus. We feel quite fortunate, in fact, to have had her pass through the department on her way to the great things she is doing in the space program. We are under no great illusions about our role in the process: Sandra and the other NASA astronauts really do have the "right stuff". They succeed, and serve as role models, not just because they are bright and motivated, but because of "the content of their character", because they possess the willingness to engage in supremely difficult tasks, along with the self-discipline that allows them to succeed.

Our part in the process, as educators, is to continually ensure that our degree program stays current and that it uses the best techniques available for preparing students to participate in exciting opportunities like the space program, or to work in modern research environments—perhaps to propose and design experiments that take place on the space shuttle or the international space station (like the thesis work of graduating Ph.D. student **Kisa Ranasinghe**, on nucleation and crystal growth rates in glasses, which involved studies of containerless glass formation in NASA's Electrostatic Levitator Furnace at Marshall Space Flight Center.)

To fulfill that responsibility, the UMR physics department recently participated in a pilot program involving something called an "academic audit". Unlike conventional program reviews, which focus on how well a department fulfills its mission, the academic audit helps a department focus on *processes* it uses to maintain and improve the quality of its program. To prepare for the audit, the department composed a pre-audit self-study and improvement plan that a six-member audit team would use as a reference point. On the day of the audit, the audit team, composed of members from other UM campuses, converged on Rolla and spent the entire day meeting with groups of Physics faculty and students. The visit, which was intense and informative, but generally enjoyable for both the department and the audit team, led to a number of ideas that the department is looking to implement to enhance the education and the degree we provide to tomorrow's leaders in science and technology. Just one way, we hope, that we are "keeping the faith" with the spirit embodied in the nation's space program.



Paul E. Parris

Jack Rivers Remembered

We were saddened to hear of the passing of Associate Professor Emeritus **Jack Rivers**, who died on December 7, 2002. Jack, who joined the UMR Physics faculty in 1956, had retired in 1990 and was living in Lawrence, Kansas close to his daughter, **Cassandra Rivers Messer**. He is survived by Cassandra, son-in-law **Richard Messer**, daughter **Penelope Rivers**, sister **Joy Glaser**, brother **David Rivers** and two grandsons. Before his retirement, Jack had a reputation as a theorist with a deep understanding of General Relativity. A memorial resolution is being prepared for presentation at the next UMR General Faculty Meeting. It will appear in the next edition of **Matter 'n Motion**.



Faculty, Staff, & Student Notes:

- UMR Assistant Professor **Max Bertino** has had a very productive year. In addition to his work on nanoparticles (See the article *Max Bertino: Sweating the Small Stuff* on page 9) Max and his charming wife **Ulli** are proud to announce the birth, on November 7, 2003 of their second daughter, the equally charming **Laura Alexandra Bertino**. Max reports that all aspects of the delivery went well, and the baby is (so far) sleeping through the night.
- Curators' Professor **Don Madison** has been elected Treasurer of the international Gaseous Electronics Conference. Don also presented an invited paper at the International Conference on Electron and Photon Impact Ionization and Related Topics held in Metz, France, last summer.
- **Ron Bieniek** was chosen by UMR students to receive the very first of a new series of faculty awards in recognition of his "commitment to the university and its students." The award, sponsored by L³ Communications, is given by UMR's Corporate Development Council. Ron was also selected to be university advisor to UMR's chapter of Omicron Kappa Delta, the national leadership honorary society, and gave an invited colloquium entitled *Mathematical God, Heavenly Physics* at the National Institute of Standards and Technology.
- Professor **Barbara Hale** was chosen to receive an Outstanding Advising Award from UMR's Alumni Association for her role as faculty advisor for the UMR chapter of the Chi Omega sorority.
- In August, Professor and Department Chair **Paul Parris** gave an invited talk, entitled *Polaronic Theories of Charge Transport in Organic Materials*, at the Gordon Research Conference on Organic Electronic Materials held in Newport, Rhode Island.
- Professor **Allan Pringle** designed and ran activities for Physics Day at Worlds of Fun amusement park in Kansas City. About 1500 students from a five-state region participated in the event. Allan also received a special award recognizing winners of multiple campus Faculty Excellence Awards in previous years.
- In November, Physics Instructor **Richard Sankovich**, Adjunct Assistant Professor **Agnes Vojta**, and Assistant Professor **Carsten Ullrich** kept the Physics Department's musical traditions alive by presenting the Rolla community with a lively concert of chamber and vocal music at the Cedar Street Center.
- UMR's **Michael Schulz** had a banner year. Not only was he promoted to Full Professor of Physics, but he won a prestigious campus Faculty Excellence Award, gave an invited talk at the International Conference on the Application of Accelerators in Research and Industry, and received invitations to give featured talks at three prestigious international conferences in 2003. His Ukrainian-born wife, **Nadya**, has applied to become a naturalized United States citizen.
- UMR Assistant Professor **Carsten Ullrich** was the co-author with Nobel Laureate collaborator Walter Kohn, on an article that appeared in *Physical Review Letters*, entitled *Degeneracy in density functional theory: topology in the v and n spaces*.

Come Back for Homecoming

The UMR Physics Department warmly invites you to return to Rolla for **UMR Homecoming 2003** on the weekend of **October 10-11, 2003**. On Friday afternoon, October 10, the department will hold an open house and special programs for its alumni and friends. Tours of laboratories and educational facilities will be offered and there will be opportunities for interaction with current UMR physics students. Come see what we have done since you received your degree.

In keeping with a long-standing tradition, a UMR alumnus or alumna will deliver the Homecoming 2002 Physics Colloquium at 4 PM. on Friday, October 10. Later that evening, professors **Ed** and **Barbara Hale** will host a homecoming reception in their lovely home. Contact us at physics@umr.edu for specific information about physics department activities, or alumni@umr.edu for general homecoming information. Come home to your college roots, and help us celebrate UMR's past, even as we work to shape its future!

- The UMR Physics department will be hosting an international conference this coming fall on the dynamics of surfaces. The workshop, entitled "The 11th Workshop on Surface Dynamics", to be held in Rolla, Oct. 4-6, 2003, is being co-organized by UMR Assistant Professor **Max Bertino** and **Talat Rahman** of Kansas State University.
- UMR Physics Professors **Carsten Ullrich**, **Greg Story**, and **Paul Parris** engaged in a spirited dialog broadcast over KUMR, the campus public radio station, about current ideas in physics. The discussion, which you might still be able to catch through KUMR's web archive at <http://web.umr.edu/~kumr/raudio/ra2/fourth.ram>, touched on the relation between physics, art, and music, and was led by **Louise Morgan** (wife of **Ron Bieniek** and KUMR radio personality) on her Fourth Friday program of Nov 22, 2002, entitled "Tough Stuff."