

Frontiers in Physics Colloquium Series

The 2003 *Frontiers in Physics Colloquium Series*, featured a wide spectrum of interesting talks from scientists from around the country and abroad. The spring series started with a visit from



Peter Young

Prof. **Andr e Bandrauk** from the Universit  de Shrebrooke in Canada, who discussed computer simulations of molecules in intense ultrashort laser pulses. Later in the semester Prof. **Peter Young** of the University of California Santa Cruz addressed the peculiar properties of disordered spin systems called spin glasses. Prof. **Stephan de Bi vre** of the Universit  de Lille in France discussed the connection between chaos and quantum mechanics in a talk entitled *Quantum maps: a case study in quantum chaos*. Further talks on condensed matter physics were given by Dr. **Jeff Terry** of the Illinois Institute of Technology, Prof. **Kartik Gosh** of Southwest Missouri State University, Prof. **David Clarke** of the University of California Santa Barbara, and Dr. **Rajesh Narayanan** of the Max-Planck-Institute in Dresden, Germany. Prof. **Theo Zouros** of the University of Crete in Greece talked about *Quasi-free electron scattering from highly charged ions*. The spring series closed with Prof. **Igor Herbut** of Simon Fraser University in Vancouver in Canada who presented an intriguing new theory for high-temperature superconductivity.

Prof. **Ann Orel** of the University of California Davis led off the fall semester colloquia, with a talk on *Low-energy electron impact dissociation of molecules*. Later in September, faculty member **Don**

Hagen presented his plans for the new *Center of Excellence for Aerospace Propulsion Particulate Emissions Reduction Research* to be established at UMR. One of the highlights of the fall series was the talk by UMR alum **Dr. Ed Stephens** (PhD '94) of Cutting Edge Optronics who was this years Homecoming speaker. Ed gave a very witty and to-the-point talk on *Career paths and expectations as an industrial scientist*. In

October, faculty member **Thomas Vojta** discussed the background of the 2003 Nobel Prize in Physics which was awarded to **A. Abrikosov**, **V. Ginzburg** and **A. Leggett** for pioneering contributions to super-conductivity and superfluidity. The fall series also included talks on atomic



Stephan de Bi vre

physics by Prof. **Uwe Thumm** of Kansas State University and Dr. **Robert Moshhammer** of the Max-Planck-Institute in Heidelberg, Germany. Further talks were given by Prof. **Wouter Montfrooij** of the University of Missouri-Columbia, Dr. **Martina Hentschel** of Duke University, Dr. **Luca Vattuone** of the Universita' di Genova in Italy, and Prof. **John Shumway** of Arizona State University. The series closed with Dr. **Stephane Mazevet** from the Los Alamos National Laboratory who discussed *Simulations of matter under extreme conditions*.

UMR Students & Alumni: In Press

The following journal articles which appeared over the last year feature work by UMR undergraduate students,¹ graduate students,² or UMR alumni³ under the supervision of UMR faculty.

Three-Dimensional Fully Differential Single Ionization Cross Sections for 75 keV p + He Collisions, A. Hasan, N.V. Maydanyuk,^{2,3} B.J. Fendler,^{1,3} A. Voitkiv, and M. Schulz, submitted to J. Phys. B (2003).

Three-Dimensional Imaging of Atomic Break-Up Processes, M. Schulz, R. Moshhammer, D. Fischer, A. Hasan, N.V. Maydanyuk,^{2,3} H. Kollmus, D.H. Madison, M. Foster,^{2,3} S. Jones,³ and J. Ullrich, Physics of Electronic and Atomic Collision, Book of Invited Papers, Physica Scripta, in press (2003).

Doubly Differential Measurements for Multiple Ionization of Argon by Electron Impact: Comparison With Positron Impact and Photoionization, A.C.F. Santos, A. Hasan, T. Yates,^{1,2} and R.D. DuBois, Phys. Rev. A 67, 052708 (2003).

Three-Dimensional Imaging of Atomic Break-Up Processes, M. Schulz, R. Moshhammer, D. Fischer, A. Hasan, N.V. Maydanyuk,^{2,3} H. Kollmus, J. Ullrich, D.H. Madison, M. Foster,^{2,3} and S. Jones,³ to be published in the proceedings of the XXIII International Conference on Photonic, Electronic and Atomic Collisions, Stockholm, Sweden, 23-29 July, 2003.

Probing Scattering Wave Functions Close to the Nucleus, D.H. Madison, D. Fischer, M. Foster,^{2,3} M. Schulz, R. Moshhammer, S. Jones,³ and J. Ullrich, Phys. Rev. Lett. 91, 253201 (2003)

A Convenient Formalism for Auger and Ionization of Overlapping Resonances, M.M. Tabanli,³ J.L. Peacher and D.H. Madison, J. Phys. B 36, 217-233 (2003)

Coplanar Symmetric (e,2e) Cross Sections for Krypton 4s Ionization, M. A. Haynes, B. Lohmann, A. Prideaux,² and D. H. Madison, J. Phys. B. 36, 811-15 (2003).

Role of Post Collision Interaction in Electron Impact Ionization of Argon and Krypton, A. Prideaux² and D.H. Madison, Phys. Rev. A 67, 052710 (2003).