

ITAMP NEWS

Spring 2005

Great News

ITAMP is celebrating the news that Professor Mikhail Lukin of the Harvard Physics Department (a former ITAMP postdoc), has decided to accept Harvard's offer of a tenured professorship. Lukin and his group carry out research on topics in quantum information science, quantum and nonlinear optics and mesoscopic physics. His wife,



Prof. Mikhail Lukin

Changes in Administrative Staff

Ms. Verity Parris, ITAMP Office Administrator for 15 years, retired at the end of October 2004. Ms. Lisa Bastille has taken over the many functions of this demanding position. At the same time Ms. Teri Hamelin stepped into the position of Division Administrator for the Atomic and Molecular Physics Division at CfA, dealing with ITAMP budgets and reimbursements. We thank Lisa and Teri for their dedication to making these challenging transitions as seamless as possible.



Verity Parris, retired after fifteen years of service

Professor Susanne Yelin, will remain on the Physics Department faculty at the University of Connecticut (Storrs) and will continue to carry out research and participate in ITAMP programs several days per week. ITAMP is fortunate to have both Mikhail and Susanne contributing to its scientific programs.



Prof. Susanne Yelin

Cluster computer

ITAMP has joined a Harvard-Smithsonian-wide cluster computation project through the purchase of 2 compute nodes (each node has two AMD Opteron processors). The computer, powered by Redhat Linux and the Sun Grid Engine queuing system, is up and running. At present the total number of nodes stands at 32, already with significant demand for future expansion. Several ITAMP postdocs are currently using the cluster.



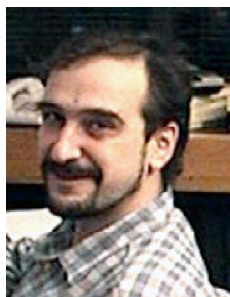
*New Division Administrator.
Ms. Teri Hamelin*



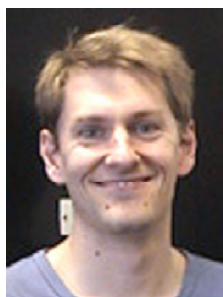
*New ITAMP Admin. Coord.,
Lisa Bastille*

ITAMP Postdocs

Moving on ...



Dr. Daniel Vrinceanu



Dr. Anders Sørensen

ITAMP postdoctoral fellow, Dr. Anders Sørensen, left after only two years at ITAMP to take an associate professorship position at the University of Copenhagen in

Denmark. Sørensen has carried out forefront research in the general area of quantum information, including such topics as the entanglement of quantum states of ions and the capacitive coupling of neutral atoms to mesoscopic conductors.

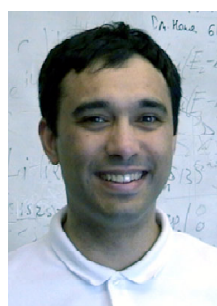
Dr. Daniel Vrinceanu left ITAMP in September 2004 to take a Director's Office Postdoctoral Fellowship at Los Alamos National Laboratory. Vrinceanu, who received his Ph.D. from Georgia Tech, has worked on a number of problems associated with the formation of anti-hydrogen from magnetically trapped cold positrons and antiprotons, and the line-broadening and line-shifts due to collisions of excited and ground-state He atoms.

Moving in ...

In September 2004, Dr. Robin Santra and Dr. Guo-Xin Chen arrived at ITAMP to start postdoctoral fellowship appointments. Dr. Santra's research interests lie in the area of ultra-fast science, including the



Dr. Guo-Xin Chen

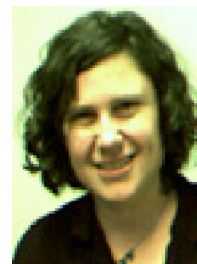


Dr. Robin Santra

photoionization of clusters, the description of highly excited molecular states, and double photo-detachment in molecular anions. Dr. Chen works in atomic astrophysics and is supported half time by ITAMP and half-time through a Chandra (X-ray satellite) cycle 6 grant. Chen employs R-matrix methods to carry out calculations of electron impact excitation, electron-ion recombination, and photoionization for a variety of ions of astrophysical interest.

In Memoriam

Former ITAMP postdoctoral fellow Professor Bilha Segev died in Haifa, Israel on March 17, 2005 of complications arising from her battle with cancer. She was 41 years old and a faculty member in the Chemistry Department at Ben-Gurion University (BGU) of the Negev.



Prof. Bilha Segev

Bilha received her B.S. degree, Summa cum Laude, in 1988, and her M.S. (1992) and Ph.D. (1996) from The Technion, Israel Institute of Technology. She spent two years, 1996—1998 at ITAMP, funded by both a Rothschild and a Fulbright Postdoctoral Fellowship. At ITAMP she worked with Jack Wells, Robin Coté, Eric Heller, Jim Babb, and Mark Raizen, exploring such varied topics as electron-positron pair production in heavy ion collisions, evanescent-wave atomic mirrors, energy transfer processes between Born-Oppenheimer surfaces in molecules, and superluminal light propagation and quantum noise.

In 1998, Bilha joined the chemistry faculty at BGU. She was a gifted teacher and lecturer and received several Ben-Gurion University honors for her excellence in teaching. In addition, she won the prestigious Alon Foundation Fellowship for outstanding young faculty in Israel and in 2002 she received the Toronto Prize for excellence in research.

Bilha radiated tremendous warmth and enthusiasm for science, and was universally loved by her students and colleagues. Her smile was contagious and her wisdom was inspirational. She leaves her husband, two children, and many friends and colleagues who miss her greatly.

Thanks to our Advisory Board

Prof. M. Raymond Flannery (Georgia Institute of Technology) and Dr. Paul Julienne (NIST) have agreed to serve on the ITAMP Advisory Board, replacing Prof. Mitch Pindzola (Auburn University) and Dr. Charles Clark (NIST) who rotated off, having completed their 3-year terms.

We are extremely grateful to all of the board members, who meet once a year in Cambridge to discuss ITAMP programs and provide us with wise counsel and the valuable perspective of the AMO Physics community.

Continuing board members include: Prof. Keith Burnett (Oxford), Prof. Margaret Murnane (U. Colorado/JILA), Prof Ann E. Orel (University of California), and Prof. Joseph Eberly (University of Rochester).

Workshop News

Atomic Physicists and Astrophysicists Convene at "X-DAP"

A joint workshop "X-ray Diagnostics of Astrophysical Plasmas," sponsored by ITAMP and the Chandra X-ray Center (CXC), was held in Cambridge from November 15 - 17, 2004. The CXC is located at the Harvard-Smithsonian and manages the NASA-funded X-ray observatory Chandra. The Scientific Organizing Committee included: Randall Smith (NASA/GSFC and JHU), Jay Bookbinder (CfA), Nancy Brickhouse (CfA), Jelle Kaastra (SRON), Tim Kallman (NASA/GSFC), Kate Kirby (CfA), Duane Liedahl (LLNL), John Raymond (CfA), and Claude Canizares, (MIT).

Covering theory, experiment and observation, the workshop emphasized the role of atomic theory and experiment in understanding astrophysical measurements and developing astrophysical models. The number of participants was in excess of 100 and accordingly the workshop was held at a local hotel with conference facilities.

Abstracts and talks can be found at, <http://itamp.harvard.edu/xdap/schedule.html> and a volume of the proceedings is being published.

Timely Workshop on Quantum Degenerate Gases

The workshop on Quantum Degenerate Gases in Low-Dimensionality was another hugely successful ITAMP workshop that ran from October 4-6, 2004 and was organized by B. Esry, M. Olshanii, and J. Schmiedmayer. This meeting on low-D systems was conceived before and occurred right after the experimental realization of the famed Tonks-Girardeau gas in an optical lattice by two independent groups at MPI-Garching and Penn State. The strong and non-perturbative nature of the interaction between bosons in 1D requires beyond-mean-field treatment. In one dimension, correlation between fermions requires the so-called bosonization of the interaction.

Low-D abstracts and talks can be found online at: <http://itamp.harvard.edu/low-d/low-d.html>

Second ITAMP/UConn Open House

On February 5, 2005, the second ITAMP/UConn Open House took place at the University of Connecticut in Storrs, about a 90-minute drive from Cambridge. The meeting featured talks and posters on theoretical and experimental topics by members of research groups at ITAMP, the Center for Astrophysics, Harvard Physics, and UConn. ITAMP is especially grateful to the UConn organizers for local sponsorship and the excellent lunch at the Up and Atom Cafe.

ITAMP-CIMs Co-host successful "Mesoscopic" workshop

The workshop on Mesoscopic Physics, Quantum Optics, and Quantum Information ran from May 10-12, 2004. This workshop was organized by M. Lukin, C. Marcus and A. Sørensen. More than 50 participated in this event, focusing on such topical issues as coherence and entanglement in semi conducting qubits, Kondo resonances in single-electron transistors, electron-electron correlation and decoherence in quantum dots, coupling of electron and nuclear spin and relevance to quantum computing, and photonic crystals. This workshop was in part sponsored by the Center for Imaging and Mesoscale Structures (CIMS) at Harvard.

Abstracts and audio talks may be found at: <http://itamp.harvard.edu/mesoscopic/mesoscopic.html>

2005 Upcoming ITAMP Workshops

May 2-4, 2005

Attosecond Science: Future Applications in Physics and Chemistry.

Organizers: Prof. Ken Schafer and Prof. Thomas Brabec

June 13-17, 2005

Collisional Calculations and non-LTE modeling of molecular hydrogen in astrophysical environments.

Organizers: Prof. Phillip C. Stancil and Dr. Teck-Ghee Lee

August 1-26, 2005

Few-and Many-Body Physics in Quantum Liquids and Gases (Joint with the Institute for Nuclear Theory).

Organizers: Hans-Werner Hammer (INT, U. of Washington), Doerte Blume (Washington State), Eric Braaten (Ohio State), Murray Holland (JILA), Program Coordinator, Nancy Tate.

September 26-28, 2005

Cold Plasmas and Cold Atoms: A Merry Dance.

Organizers: Tom Killian (Rice), Francis Robicieux (Auburn), and H. Sadeghpour (ITAMP).

Spring/Summer 2005 VISITORS

Winthrop W. Smith U.Connecticut	Feb.1-May 31
John Hougen NIST	April 4-15
Jun Ye JILA	April 5-7
Michael Fleischhauer Fachbereich Physik	April 15-Aug. 31
Tony Scott Institute fuer Physikalische	April 18-19
Gora Shlyapnikov FOM Institute AMOLF	April 21-28
Brendan McLaughlin School of Mathematics and Physics	May 13-17
Anil Pradhan Ohio State University	June 1-Aug. 31
Piotr Froelich Uppsala University	June 11-Aug.20
Robert Forrey University of Pennsylvania	June 13-Dec. 31
Prof. Zong-Chao Yan University of New Brunswick	July 1-Dec. 31
Bernard Zygelman UNLV	2 weeks in Aug.

WANTED

AMO THEORY COMMUNITY INPUT

Have a hot new idea for a workshop you want to organize at ITAMP? Want to spend some quality sabbatical time or perhaps a shorter period with us? Make yourselves known to us.

Please contact:

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Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

<http://itamp.harvard.edu>