



RLE

Undercurrents

Volume 9, Number 1 • Spring 1997

A Newsletter for the RLE Community at MIT

RLE's AMO Team: Virtuosos with Atoms

In the spring 1997 issue of *currents*, we describe the exciting research conducted in RLE's Atomic, Molecular, and Optical Physics group. The twenty-four person group consists of an administrative assistant and four subgroups, or teams, under the direction of Professors Daniel Kleppner, David E. Pritchard, and Wolfgang Ketterle. This article is a profile of some of the people "behind the scenes," who support the group's research activities. When not studying the behavior of atoms in one form or another, some of the group's members relax by playing on the Balldrivers softball team with Professor Pritchard pitching.



Administrative Assistant **Carol A. Costa** has provided secretarial support to this busy group since 1991. Her many duties include scheduling travel, managing ac-

counts, and preparing correspondence and reports, in addition to other tasks. Carol enjoys working with the faculty, students and staff and is proud of their many achievements.

Professor **Daniel Kleppner's** research team includes three research assistants who study the Rydberg atom structure in electric and magnetic fields and the ionization properties of the Rydberg atom.



Joel C. DeVries has a BS degree from the University of Michigan and began working with Professor Kleppner in September 1993.

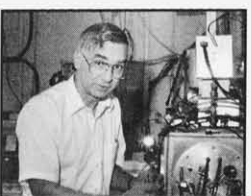


A graduate of Williams College, **Jeffrey R. Holley** has been working with Professor Kleppner since 1991. Jeff and his wife Sonia recently returned from their honeymoon in Greece and France. He enjoys playing rugby, in addition to playing softball with the Balldrivers.



Neal W. Spellmeyer received his degree from the University of Wisconsin in 1988, and has been working with Professor Kleppner since 1993.

Professor **David E. Pritchard's** group includes six graduate students, two post-docs, and a UROP student, who are working on two main projects.



Postdoc Dr. James V. (Trey) Porto and research assistants Michael P. Bradley, and Simon Rainville work with Professor Pritchard to develop a sensitive device for

detecting single ions. They are also carrying out highly accurate mass measurements using conventional and magnetic fields.



Originally from North Carolina, Dr. **James V. (Trey) Porto** completed his doctoral work at Cornell University and his undergraduate work at the University of North Carolina in Chapel Hill. He enjoys playing basketball. Trey's wife Tatjana Curcic is also a physicist.



Michael P. Bradley, a native of New Brunswick, Canada, received a BS degree from the University of New Brunswick. He is a sixth-year graduate student with Professor Pritchard.



Simon Rainville, pursued his undergraduate work at McGill University in Montreal, Canada. The Quebec native came to RLE in summer 1996. Simon plays center field for the Balldrivers softball team. He loves to ski and enjoys biking and juggling.

UROP student Roland Nguyen is a senior from North Dakota and has been working with this group since February 1996.

In Professor Pritchard's second area of study, Postdoc Dr. Al-Amin Dhirani, research assistants David A. Kokorowski and

Richard A. Rubenstein, and graduate students Tony Roberts and Edward T. Smith investigate longitudinal momentum coherences in an atomic beam using an atom interferometer. Al-Amin explains that it takes three to six months to build their experimental apparatus.



Dr. **Al-Amin Dhirani** received his PhD from the University of Chicago. He plays second base for the Balldrivers. From Edmondton, Canada, Al-Amin came to RLE in July 1996.



Research assistant **David A. Kokorowski** is from Los Angeles and attended the University of California at Berkeley. David plays short-stop for the Balldrivers.



Helena, Montana, native **Tony Roberts** attended Montana State University in Bozeman. He has been working with Professor Pritchard's group since Fall 1996.



From Philadelphia, research assistant **Richard A. Rubenstein** earned his bachelor's degree from Amherst College in 1993. He has been working with Professor Pritchard since July 1993. Richard enjoys reading and jogging. His wife Patricia works at Radcliffe College.

(continued on page 2)

Be Safe, Not Sorry

Safety is an issue that affects everyone at MIT, whether in RLE or on the streets of the campus. To test your safety skills, see if you can answer the following questions. Gerry Power, RLE Facilities and Safety Officer (x3-2541, pager 430-2621), can provide you with more information.

1. What is the chemical hygiene plan (CHP)?
2. Where is the CHP located, and how can you obtain a copy?
3. Who is RLE's chemical hygiene officer?
4. What is a copy of an MSDS?
5. How do you obtain copies of an MSDS? How can you access information to retrieve a copy of an MSDS?
6. What should you do if you notice suspicious activity in your area?
7. What is a "lock out" or "tag out" device?
8. Have you been provided with required safety training such as personal safety training or electrical or laser safety training?





Research Assistant **Edward T. Smith** is a native of Seattle, Washington. He began working with Professor Pritchard in January 1994.



Professor **Wolfgang Ketterle's** research team is studying Bose-Einstein condensation. The team consists of Visiting Scientist Dr. Hans-Joachim Miesner, Postdoc Dr. Joern Stenger, research assistants Michael R. Andrews, Ananth Chikkatur, Dallin S. Durfee, Shin Inouye, Christopher E. Kuklewicz, and Dan M. Kurn.

"I came to MIT at just the right moment. The whole group works together as a wonderful team. . ."

- Hans-Joachim Miesner



Michael R. Andrews, from Brooklyn, New York, came to RLE in July 1993. He completed his undergraduate work at the State University of New York at Stony Brook.



Newly arrived **Ananth Chikkatur** chose to work with Professor Ketterle because he is interested in cooling and trapping atoms in atomic physics and feels that his work here will be in a new and exciting territory. He is from Queens, New York, and completed his BS in Physics at the University of Rochester. Ananth enjoys reading, playing the drums, and racquetball.



Dallin S. Durfee received his BS in Physics from Brigham Young University in Provo, Utah. The Orem, Utah, native joined RLE in June 1994, and is currently working on achieving an improved source of slow atoms. Dallin plays right field on the Balldrivers. His hobbies include playing the guitar and writing music. His wife Memorie is also a physicist, working at Thermedics Detection, Inc.



Shin Inouye is a native of Tokyo and received his bachelor's and master's degrees from the University of Tokyo. He has been a research assistant with Professor Ketterle since September 1996. Shin likes reading, watching movies, and playing Go, a Japanese board game which is similar to chess.



Research Assistant **Christopher E. Kuklewicz** earned a bachelor's degree in Physics and Math from the University of Texas at Austin. He has been working for Professor Ketterle since October 1996. Chris enjoys hacking in his spare time and plays on the group's softball team.



Dan M. Kurn received his bachelor's degree from the University of California at Berkeley and has been a research assistant for Professor Ketterle since June 1995.

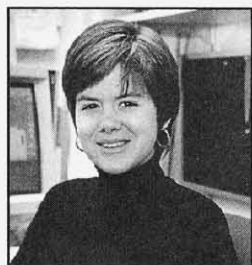


Dr. **Hans-Joachim Miesner** says the work is "extremely exciting. I came to MIT at just the right moment. The whole group works together as a wonderful team." Hans is a graduate of the Max-Planck Institute of Nuclear Physics in Heidelberg, Germany, and began working at RLE in August 1996.



Dr. **Joern Stenger** came to RLE as a postdoc in July 1997. He graduated from the University of Erlanger in Germany in October 1995.

New Faces



Administrative Assistant **Darla J. Chupp** began working for Professor Alan V. Oppenheim in RLE's Digital Signal Processing group on November 18, 1996. Before coming to RLE, Darla worked as executive assistant for the American Academy of Arts and Sciences.

Darla, a Wooster, Ohio, native, moved to Boston in May 1995 and holds a BA degree in history from Ohio University. Darla minored in art and enjoys painting and playing the guitar. She is also taking a German language class.



Lisa J. Fitzpatrick, financial administrator in RLE's Headquarters Fiscal Group, brings 12 years of MIT experience to her new position in the Lab. Lisa came to RLE on September 23, 1996 after spending ten years with MIT's Department of Aeronautics and Astronautics as a research administrator. While at Aero and Astro, Lisa says that she gained valuable insight into the unique needs of the Institute.

A native of Revere, Massachusetts, Lisa has always loved numbers, wowing her siblings with her ability to remember long numbers. Lisa's hobbies include reading and traveling. She and Captain Stephen J. Fitzpatrick III, an airline pilot, were married in a June wedding. Lisa and Steve honeymooned in Alaska and the southwest.

Rebecca L. Garnett began working as administrative assistant for Nathaniel I. Durlach and other researchers in RLE's Sensory Communication group on September 1, 1996. Prior to coming to RLE, Rebecca was director of quality improvement for a mental health agency and worked as assistant director and operations manager in the Department of Student Activities at the University of

Massachusetts. Rebecca holds an interdisciplinary master's degree from the University of Massachusetts.



Administrative Assistant **Cynthia A. Lewis** began working for Professor Henry I. Smith in RLE's Quantum-Effect Devices group on July 28, 1997.

Before coming to RLE, Cindy worked for MIT's Center for Theoretical Physics as a senior secretary (technical). She also worked for the Robotics Laboratory at Harvard University and the Department of Chemistry at Harvard University.

Cindy is a state-certified emergency medical technician and medical assistant. Her hobbies include figure skating, martial arts, motorcycle riding, and weight training. She also enjoys spending time with her daughter Amy's nine-month-old son, Mikey.



Lorraine J. Simmons has been working at MIT since 1986. In October, 1996, she joined the RLE Headquarters Fiscal Group as financial assistant. Before coming to

RLE, Lorraine worked in MIT's Department of Chemical Engineering, the Plasma Fusion Center, and Graphic Arts.

Lorraine has always liked working with numbers. Since it is her responsibility to match packing slips and invoices to purchase orders, she wants to remind everyone that it is important to send her backup information pertaining to charges on RLE accounts.

Lorraine and her husband Robert live in Somerville and have two grown children, Robert, Jr. and Darlene. Lorraine and Robert are avid candlepin bowlers, bowling every Friday night on their team, the "2 Plus 3," which tied for first place in their league. Lorraine's average is 83; Robert's is 103. Lorraine also enjoys reading mysteries.



RLE undercurrents

RLE undercurrents is a publication of the Research Laboratory of Electronics for the RLE community at MIT. The following individuals contributed their time and energy to this issue: Joseph F. Connolly, John F. Cook, Dorothy A. Fleischer, David W. Foss, Wendy E. Owens, Barbara Passero, and Ben Richardson.

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undercurrents is printed on recycled paper.

Retirements

Long-time RLE employees **John F. Cook**, **Virginia R. Lauricella**, and **John S. Peck** were honored at a retirement ceremony in the Grier Room in September 1996. The three together had served more than 100 years with MIT. Each retiree was presented with an MIT watch and an engraved silver champagne bucket.

John Cook, RLE senior photographer, retired after more than 36 years of service at MIT, 34 of those with RLE. John worked with us on the 50th anniversary events and continues to work as a contractor on the *RLE Progress Report*, *currents*, and *undercurrents*. John is currently photographing Building 20 for the MIT Archives historical project.

Jeannie, RLE financial administrator, retired after 28 years of service at MIT. Jeannie was responsible for RLE's accounts payables services. She will join her husband Salvi, also a long-time MIT employee, who retired before her. Jeannie and Salvi look forward to spending more time at their vacation residence in Florida.

John Peck, MIT purchasing agent, retired after 36 years of service. John spent nearly all his career at RLE, serving as RLE's purchasing officer before working in the General Purchasing Office.

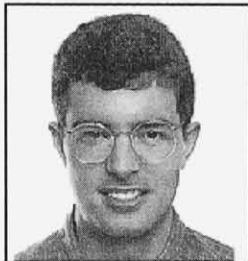
Eleanora Luongo, administrative secretary in the Sensory Communication group since 1984, retired on July 1, 1996. Nora returned on May 6, 1997, to work part-time for the group.



From left: John S. Peck, Virginia R. Lauricella, and John F. Cook

In Memoriam

Benjamin M. Hammond, 29, a third-year graduate student in the Harvard-MIT Division of Health Sciences and Technology Program, died on October 27, 1996, of a heart attack. Professor Kenneth N. Stevens, Mr. Hammond's advisor and head of RLE's Speech Communication group, remarked that Mr. Hammond "was very bright, popular, very good academically and also in his research." Mr. Hammond did research at the Massachusetts Eye and Ear Infirmary and had recently presented his research on how the fibers of the auditory nerve convey speech patterns from the cochlea to the brain.



A 1989 Harvard graduate, Mr. Hammond toured with his rock band *Men of Clay* for three years and then worked with Kierkegaard and Associates, an acoustics firm. He designed the outdoor sound system for the Seiji Ozawa Hall at Tanglewood, and he also worked on the acoustics of Jordan Hall at the New England Conservatory.

Benjamin is survived by his parents, Michael P. Hammond and Anne L. Hammond of Houston, Texas, and Bedford Hills, New York, and his brother Thomas of Bedford Hills.

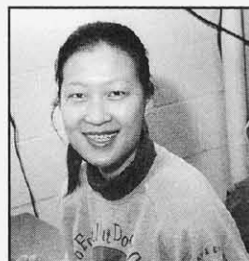
Marilyn R. Fownes, a technician in RLE from 1948 to 1982, died on June 23, 1997, of complications from Alzheimer's disease. Marilyn worked under the supervision of Gerald J. Lorden (see obituary) for 15 years. In 1982, she transferred from RLE to the Plasma Fusion Center.



Kit-Wah Lai, 39, of Medford, Massachusetts, died on June 7, 1997, at the Massachusetts General Hospital of complications from brain cancer. Kit-Wah had served as administrative assistant in RLE's Electromagnetics group since 1989. Professor Jin Au Kong, her supervisor, says that, "Kit was highly respected and liked by all the members of the group. She was a kind person and a hard worker. We will miss her very much."

In a spring 1994, *undercurrents* article, Kit described her love of music. She and her sister Vicky owned hundreds of CDs by many types of artists. Kit loved to knit and made many of her own colorful sweaters and also knitted gifts for others.

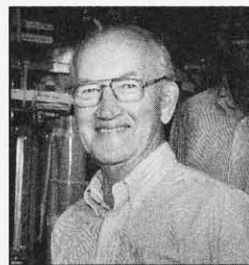
Kit is survived by her parents, Wai (Lee) and Chan Lai of Boston, four sisters, and two brothers.



Gerald J. Lorden

died of a heart attack on June 26, 1997. Gerry started as a laboratory assistant in 1951 and worked his way up the ranks to the position of foreman. He served as supervisor of RLE's instrument room for about 15 years. Gerry officially retired from RLE in December 1981, but continued to work part-time.

Sponsored research staff member Jack Barrett in RLE's Radio Astronomy group remembers Gerry as a "meticulous worker, always helpful and cooperative. Gerry was a sports enthusiast, following the Red Sox religiously."



Gerry leaves his wife Ann, two daughters, Gail and Joyce, a son Gary, a granddaughter Kyra Rae, a sister Ann Marie DeMore, and a brother Edward.

John B. Sanroma

passed away on March 8, 1997, at the age of 97 in Arizona. In an *undercurrents* article (spring 1991) about the early days of the RadLab and RLE, he exclaimed, "I saw the beginning of everything!" During World War II, John worked as a precision instrument maker in the RadLab. From 1946 until his retirement in 1969, John continued on in RLE's machine shop.

An avid photographer, John was the nation's first "candid cameraman," photographing important people and events for the old *Boston Traveler* newspaper. He had a life-long interest in music and played both the flute and piano. John survived Maude, his wife of 67 years, by 15 days. John leaves three sons, Joseph, John, and Paul, and a daughter Carolyn LeBeau.



Helen L. Thomas

former director of RLE's publications office, died of cancer on August 12, 1997, at the age of 91. Born in New York City, she held a doctorate in the history of science from Radcliffe college. She retired from RLE in 1971 after 17 years of service. Prior to RLE, Helen was employed at Harvard University and the Raytheon Company. She leaves a son, Roger M. of Weston, a brother, Harold B. Lewis of Salem, Connecticut, and two grandchildren.



Short Waves . . .

Maureen C. Howard, administrative assistant in RLE Headquarters, is enrolled in the catering certificate program at Newbury College and recently received a certificate in food protection management. Maureen reports that both her daughters, Kimberly C. and Rasheena R., are doing very well. Kim, elder daughter of Maureen and her husband Anthony, graduated *cum laude* with a bachelors of fine arts degree and a minor in African studies from New York University's Tisch School of Arts. Kim, who will attend graduate school this fall, is free-lancing with several talent agencies in New York. Sheena presented an inspiring talk, "It Takes Courage to Care," as emcee for the Boston Public Schools' annual Martin Luther King Jr. celebration on March 12, 1997.



Skyler Evan Mickunas was born on December 5, 1996, to **Angela (Odoardi)**

Mickunas and her husband Stephen. As an administrative secretary in RLE's Materials and Fabrication group, Angela provides support to Professors Leslie A. Kolodziej, Clifton G. Fonstad, and Terry P. Orlando.

Research Specialist **Mark K. Mondol** of RLE's Quantum-Effect Devices group and his wife Ally Hines became the parents of a baby boy Galileo Mondol on July 17, 1996. Galileo, who was born at home, loves to watch *Star Trek*, but, according to his dad, hasn't got the hang of using his telescope yet.

Kathryn V. Power, daughter of RLE Facilities Officer **Gerry Power** and his wife Stefanina, was married on May 17, 1997, to Keith Carty in Everett, Massachusetts. The couple spent their honeymoon in Aruba and reside in Revere.

Lamar A. LaForce, 12, son of **Maxine P. Samuels**, RLE Headquarters financial assistant, was one of 12 students chosen from the Somerville Boys and Girls Club to spend a week at Disney World in September 1996 to celebrate its 25th anniversary.

Professor **Thomas F. Weiss** of the Auditory Physiology group has a new grandson. Madison Thomas Hofmeester was born to Professor Weiss' daughter Lisa and her husband Nico on October 2, 1996.

Eleanor Ann White was born on June 28, 1997, to Professor **Jacob K. White** of RLE's Circuits and Systems group and his wife Barbara Bratzel.

New Repair and Maintenance Process comes to RLE

MIT has recently undergone a major redesign of its repair and maintenance procedures. One component of this redesign is the concept of "zone" coverage for repair and maintenance requests. Previously, all requests were dispatched from one central location, Building E19. With the redesign, the campus has been divided into five zones (Zone A through Zone E) with the goal of providing a more efficient local response to requests. Each zone consists of a team made up of coaches, maintenance mechanics and tradespeople. The coaches support the teams by prioritizing jobs and assigning tasks. The maintenance mechanics take care of basic tasks while the tradespeople focus on more specialized or complex problems.

As in the past all requests for service within RLE should first be directed to RLE Facilities/Safety Officer Gerry Power (x3-2541, pager 430-2621). If Gerry is not available, then the zone team should be contacted.

RLE receives services from the Zone B team which covers buildings 13, 17, 20, 24, 26, 31, 33, 34, 35, 36, 37, 38, 39, 48, 57, 70 and NE43. The Zone B room is located in building 24-015 and provides service Monday through Friday from 7:00 AM to 3:00 PM. The phone number is 258-9425. After hours service may be obtained by calling 3-4948 (FIXIT).

Alternative methods of contacting Zone B are:

- 1) Fill out a request form on the World Wide Web at <http://web.mit.edu/plant/www/rm/b/rm-request.html>
- 2) Send e-mail to fix-xx, (where xx is the building where the repair is needed). For example, to report a problem in Building 36 send e-mail to fix-36@mit.edu

For more information on the overall redesign of the repair and maintenance process, see the Physical Plant World Wide Web page at <http://web.mit.edu/plant/www/rm/index.html>.

Ivan in Israel and Egypt

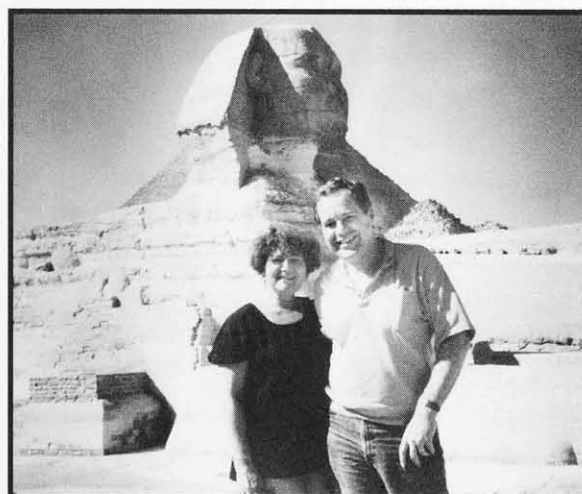


Shown with graduate students and technical staff from the University of Tel-Aviv are: Dr. Eli Jerby (second from the left), Ivan Mastovsky (third from the left), and Dana Mastovsky (next to Ivan).

Ivan Mastovsky, research specialist in the Plasma Physics group at RLE, and his wife Dana spent a month in Israel last winter. Ivan provided technical support for experiments in microwave generation at Tel-Aviv University. The research is a joint project between MIT and Tel-Aviv University which is funded by a grant from the Binational Science

Foundation. The research was made possible by a donation of equipment from the late Professor George Bekefi's RLE research group. Former visiting scientist Eli Jerby hosted Ivan at the University of Tel-Aviv.

Ivan and Dana traveled to various parts of Israel and also visited Egypt for a long weekend, where they particularly enjoyed seeing the pyramids.



Dana and Ivan in front of the Sphinx.



Let's Take a Stroll

Ready to roll in their custom-made stroller are 20-month-old triplets (from left): Aneesh Mandayam Anand, Giridhar Mandayam Anand, and Suma Mandayam Anand, the children of Principal Research Scientist Dr. **Mandayam A. Srinivasan** of RLE's Sensory Communication group and Professor Anuradha M. Annaswamy of the Mechanical Engineering Department. In the spring 1996 *undercurrents*, we showed the triplets at age six months.