COSAM’s Robicheauxs

Professor plays major role in physics breakthrough

An international team of scientists including Auburn University Physics Professor Francis Robicheaux has trapped and held the antimatter version of the hydrogen atom for the first time in history. The team’s breakthrough could test fundamental physics. The journal Nature published the results of the experiment Nov. 17.

“This breakthrough is significant because it’s the first time we’ve been able to hold the atomic form of antimatter. We’re now gearing up to perform high-precision experiments on these antiatoms,” Robicheaux said. “We’re closer to learning the very basic behavior of antimatter and why the universe is made of matter.”

The lack of antimatter in the universe remains one of the biggest mysteries of science. The research collaboration at CERN, Europe’s particle-physics lab near Geneva, Switzerland, has confined the antihydrogen atoms in a magnetic trap for more than 170 milliseconds, a breakthrough in that while large quantities of the atoms were first made at CERN eight years ago, the scientists could not store them. Antiatoms touched the ordinary-matter walls of the experiments within millionths of a second after forming and were instantly converted to energy and other particles.

CERN is an acronym for the French Conseil Européen pour la Recherche Nucléaire, or European Council for Nuclear Research.

“Our paper described the first positive results, so the number of particles was small and the amount of time we held them was short. In the past month, we’ve vastly improved the trapping efficiency and the length of time the atoms are trapped,” Robicheaux said.

The progress was first made possible through the team’s ability to cool down the antiprotons to temperatures colder than the surface of Pluto, as low as minus 443 degrees Fahrenheit, or 9.26 Kelvin. In this successful experiment, the antiproton cooler collected a large number of particles in a magnetic trap with an open top. Over time, the high-energy particles evaporated, while those with less energy remained.

When the antiprotons were mixed with the antimatter electrons, the atoms that formed were cold enough to trap. The atoms needed to be cold because the forces holding them are weak and any atom with energy more than one degree above absolute zero would be too energetic to hold.

See International physics breakthrough, Page 2

United Way asks for additional campus help in 2010 campaign

With the end of the semester approaching, campus volunteers are making a final appeal for contributions to the 2010 United Way campaign.

At the end of November, the campus campaign was at 80 percent of its $140,000 goal, with contributions of approximately $112,000. Campus efforts subsided during Thanksgiving Week, and volunteers are reaching out to the campus community to close the gap before the Christmas holidays.

The campus campaign is a major part of Lee County United Way, which is seeking $900,000 to help support 30 local charities and social service organizations. Going into the Thanksgiving holidays, the local effort was at 64 percent of its goal.

Campus campaign co-chairs Bill Sauser and Lynne Hammond said the Auburn University campaign is especially important this year because many families in Lee County have been hit hard by the recession and its aftermath.

“Now is the time for all who care about our community to step forward and help us raise the additional amount we need to reach our goal of $140,000, and Lynne and I thank all our volunteers and donors who have brought us this far,” said Sauser. “Remember, these funds are used right here in Lee County to assist our fellow citizens in need.”

To submit a pledge or increase a previous pledge, contact your local volunteer for a pledge card or send an e-mail message to Sauser at sauser@auburn.edu or Hammond at hammolb@auburn.edu.
**International guests**

Auburn University President Jay Gogue recently welcomed visiting dignitaries from Italy and Switzerland to campus as part of efforts by both the university and those countries to expand international awareness among college students. Italian Consul General Marco Rocca, at immediate right, and Swiss Consul General Claudio Leoncavallo, at far right, also met with students and faculty to discuss international issues and provide perspective on each country’s cultural, political and business environments. Each man is the ranking public official for his country in the Southeastern United States.

[Auburn University Photos]

**With scientist who warned of danger**

**Hansen wins award for book on Challenger disaster**

James Hansen of Auburn University and co-author Allan J. McDonald will receive the American Institute of Aeronautics and Astronautics 2011 Gardner-Lasser Aerospace History Literature Award for their book, “Truth, Lies and O-Rings: Inside the Space Shuttle Challenger Disaster.”

A professor in the Department of History in Auburn’s College of Liberal Arts, Hansen is also director of the Auburn University Honors College. McDonald was director of the Space Shuttle Solid Rocket Motor Project for Morton-Thiokol Inc. at the time of the Challenger accident in 1986. The University Press of Florida published the book in 2009.

“Dr. Hansen has provided excellent leadership for Auburn University’s Honors College and at the same time built a national and international reputation as a scholar and researcher,” said Provost Mary Ellen Mazey. “He is an excellent role model for our faculty, and we are fortunate to have him at Auburn.”

The award is presented for the best original contribution to the field of aeronautical or astronautical historical nonfiction literature published in the last five years dealing with the science, technology, and/or impact of aeronautics and astronautics on society. Hansen becomes the only multiple winner of this prestigious award, having received it previously for his 2005 New York Times Bestseller, “First Man: The Life of Neil A. Armstrong.”

“The fiery destruction of Space Shuttle Challenger back in January 1986 on live television mere moments after launch remains an indelible image in our nation’s collective memory,” said Hansen. “It was my honor to help Allan McDonald tell his remarkable story, as Al was someone very much on the inside of what was happening at NASA who recognized the potential disaster and tried to prevent it.”

University engineering departments around the country, including those at Texas A&M, Montana State University, Utah State University and the U.S. Air Force Academy, have adopted the book as a required text for courses dealing with engineering ethics.

Hansen and McDonald will receive the award at a ceremony next August, during the 49th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit in San Diego. The sponsoring organizations are the American Institute of Aeronautics and Astronautics, the American Society of Mechanical Engineers, SAE International (formerly the Society of Automotive Engineers) and the American Society for Engineering Education.

— Carol Nelson

**International physics breakthrough**

The collaboration has been working toward this goal for five years. The team is mainly comprised of experimentalists who designed, built and ran the experiment, including scientists from Europe, Canada, the United States, Brazil, Israel and Japan. Robicheaux serves as a theorist to the team, providing computer simulations of how mirror-trapped anti-protons might mimic antiamtom annihilations, and how actual antihydrogen would behave in the trap.

“One of the difficulties with the experiments is that if there were any antimatter protons left in the trap, they would look like antihydrogen to the detector,” Robicheaux explained. “We simulated when and where the two different types of antimatter would hit the walls and found they hit at completely different places and times. Our calculations showed we had truly trapped antihydrogen.”

Although Robicheaux is the only formal member of ALPHA from Auburn University, seven undergraduates have performed antimatter-related research in his group. “I’ve been lucky to have several excellent undergrads work with me,” he said.

A study at Auburn with two of the undergraduates indicated the method used to mix the particles would work. “Before our calculations, the method was abandoned without being tried because it obviously wouldn’t work,” Robicheaux said. “After our calculations, they tried it out and it worked even better than we expected.”

— Christy Kyser Truitt
**Campus Calendar**

**Friday, December 3**

**Last Day** Classes end for fall semester

**Monday, December 6**

**Final Exams** Monday through Friday

**Friday, December 10**

**Final Auburn Report** of fall semester; publication for spring semester begins on Jan. 14; see Auburn Daily for updates

**Monday, December 13**

**Graduation**
First graduation ceremony in new Auburn Arena, 10 a.m. and 2 p.m.

**Monday, December 20**

**Semester Break** Offices closed through remainder of holiday season, reopen for spring semester on Jan. 3

2011

**Monday, January 3**

**Offices Open** Resumption of normal business schedule

**Monday, January 10**

**First Day** of classes for spring semester

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**Goodbye to Autumn**

Auburn experienced one of the most colorful fall seasons in recent years, with the colors reaching their seasonal peak in mid-November. The President’s Home, shown here, and nearby Arboretum provided some of the most bucolic scenes until post-Thanksgiving wind and rain brought the fall display to an abrupt close.

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**For K-12 social studies classes**

**Saye adapting technology to improve teaching**

John Saye of Auburn’s College of Education is working on a federally funded project to give social studies teachers the tools to challenge their students to do more than remember names, places and dates.

With the help of a grant from the U.S. Department of Education, Saye, a professor of social science education in the college’s Department of Curriculum and Teaching, along with colleagues at Indiana University and New Mexico State University, is looking for ways to help teachers use new communication tools for problem-based learning.

The project is titled “PBL-TECH: Using Web 2.0 Tools and Resources to Support Problem-Based Curricular Innovations in Pre-Service Teacher Education.” Total funding is approximately $750,000 for three years, with Saye’s share of the overall award being more than $150,000.

Saye says K-12 students are far more likely to remember details such as names, places and dates when they are challenged to think critically about the challenges historical figures faced. In his capacity as co-director of the Persistent Issues in History Network, Saye encourages educators to develop problem-based learning strategies.

For instance, if a class is studying the American Revolution or the Civil Rights Movement, a teacher can stimulate student discussion by posing the following question: “When are citizens justified in disobeying established authority?”

“Kids don’t like social studies,” Saye said. “They see it as memorizing names and dates. Problem-based learning presents the subject to kids in a way that involves real people. We ask them to deal with questions that people have had to deal with throughout time. They learn a lot more deeply and retain more that way.”

Saye said educators could engage students more effectively by using interactive technology. “I think things like Twitter offer a lot of possibilities,” he explained. “In social studies, in the real world, Twitter has had a dramatic impact on politics and in coordinating social protest. We know our students are using those kinds of things. That’s a big part of the first step of this project, to do some conceptualization of what tools exist now. What can we recommend to teachers and teacher educators as the most promising tools available now?”

Saye’s partners for the project are Thomas Brush, associate dean for teacher education and associate professor of Instructional Systems Technology at Indiana University’s School of Education and Krista Glazewski, associate professor of learning technologies at New Mexico State University.

Saye said he and his colleagues hope the project will inspire more universities to develop problem-based learning models for teacher education and, ultimately, integrate those same approaches in K-12 school systems. If that happens, more students may come to view their social studies classes differently.

“We’re talking about students wrestling with dilemmas that people in a particular place and time wrestled with,” Saye said. “Those are the issues they are going to struggle with as adults because those questions do come up.”

— Troy Johnson

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**WPB to host Dec. 10 luncheon on opportunities for philanthropy**

The Women’s Philanthropy Board in the College of Human Sciences will host a roundtable luncheon and discussion on topical issues and exploring opportunities for philanthropy.

The luncheon event will be at noon on Friday, Dec. 10, at The Hotel at Auburn University and will feature Rosemary Elebash, state director for the National Federation of Independent Business. To register, contact the WPB office at 844-3524 or wpbchs1@auburn.edu.
Campus News Briefs

Associate dean in Architecture, Design and Construction named interim dean

Rebecca O’Neal Dagg, associate dean for research and academic affairs in the College of Architecture, Design and Construction, will become interim dean on Jan. 2.

Provost Mary Ellen Mazey said O’Neal Dagg will fill the position while a national search is conducted for a permanent dean. Dean Dan Bennett is retiring after 10 years as dean of the college.

O’Neal Dagg holds a master in architecture degree from Harvard and a bachelor’s degree from Auburn. She is an associate professor of architecture and served as program chair of the interior architecture program from 2002-07.

Online community rates Auburn in Top 10 for happiest university employees

The online career community CareerBliss has announced new data identifying the Top 10 universities with the happiest employees. On a scale of 1.0 to 5.0, Auburn University received a 4.04 happiness rating, giving the university a No. 2 ranking in the list of Top 10 “Happiest University Employers.”

The 2010 data drew from more than 90,000 independent company and university reviews to evaluate levels of employee happiness in categories including growth opportunity, compensation, benefits, work-life balance, career advancement, senior management and job security. Employees surveyed rate Auburn high for providing growth opportunities and rate their senior management above the industry average.

Pharmacy’s Jungnickel to receive alumni honors from Kansas University

Paul Jungnickel, associate dean for academic and student affairs in Auburn’s Harrison School of Pharmacy, has been selected as the 2010 recipient of the Harold N. Godwin Leadership Legacy Award.

The award recognizes outstanding leadership and contributions to the profession of pharmacy by alumni and friends of the Kansas University Medical Center/Kansas University School of Pharmacy residency training programs. The award is named for a past president of the American Society of Health-Systems Pharmacists who founded the Kansas University residency programs.

The award is presented annually at a luncheon in conjunction with the ASHP Midyear Clinical Meeting, and Jungnickel will receive this award at the ASHP midyear clinical meeting in California. He will also be invited to Kansas University next spring to present a lecture.

Georgia archival society honors Greg Schmidt of Auburn University Libraries

The Society of Georgia Archivists has selected Greg Schmidt, special collections librarian at Auburn University Libraries, to receive the David B. Gracy II Award for his article, “Functional Analysis in the Re-appraisal of Faculty Papers” that appeared in the 2009 issue of the society’s publication, Provenance.

Schmidt’s article, written in collaboration with Michael Law, a graduate student in history, lays out a case study for arranging faculty papers by university function, a methodology that has been advocated in the academic archiving community for institutional records.

Schmidt’s case study used the papers of Malcolm McMillan, a nationally recognized professor of history at Auburn from 1948-78. This collection was donated to Auburn Libraries in 1990 but had not yet been fully arranged for researchers.

Schmidt rearranged the collection, dividing McMillan’s papers into such functional areas as research, administration, teaching and outreach. He then had the collection entered into a new electronic search aid to make it more accessible to researchers.

The David B. Gracy II Award is named for the founder and first editor of the Georgia Archive.