

# The Wisconsin Physicist



**WISCONSIN**  
UNIVERSITY OF WISCONSIN-MADISON

**Department of Physics**

1150 University Avenue  
Madison, WI 53706

Tel: 608.262.4526

Email: [info@physics.wisc.edu](mailto:info@physics.wisc.edu)

Web: [www.physics.wisc.edu](http://www.physics.wisc.edu)

**Vol. 17 No.1** : **Spring** : **2012**



# Inside this Issue

Vol. 17 No.1 : Spring : 2012

Greetings from the Chair ..... 2

IceCube Neutrino Observatory: Construction & Collaboration ..... 3

What's New ..... 5

    The Physics Library ..... 5

    University Physical Society: UPS ..... 5

2011 Physics Award Banquet ..... 6

Degrees Awarded ..... 8

Graduate Student Admissions ..... 9

In Memoriam ..... 10

Foundation Accounts ..... 11

Giving ..... 12



**WISCONSIN**  
UNIVERSITY OF WISCONSIN-MADISON

### University of Wisconsin

Department of Physics  
1150 University Avenue  
Madison, WI 53706

Tel: 608.262.4526  
Fax: 608.262.3077

Email: [info@physics.wisc.edu](mailto:info@physics.wisc.edu)  
Web: [www.physics.wisc.edu](http://www.physics.wisc.edu)  
Facebook: UW-Madison Department of Physics

### On the Cover

The IceCube Neutrino Observatory was completed at the South Pole on December 18, 2010. The date marks the end of construction and the beginning of full data-taking capacity for IceCube.

## View from the Chair, Professor Robert Joynt

# Greetings

I took over as Chair in September, 2011 from Baha Balantekin. The department thanks Baha for his 3 years of distinguished service and wishes him bon voyage to California and Japan, where he will be spending his well-earned sabbatical.

2011 has been a year of transition for the Physics Department. Profs. Lou Bruch and Lynn Knutson have retired after many years of service, though both have remained actively present in the department. Profs. Teresa Montaruli and Tao Han resigned to take positions at the Universities of Geneva and Pittsburgh, respectively. These people will be difficult to replace, but we are currently searching for three new faculty in plasma physics, high-energy theory, and high-energy astrophysics. We are pleased to announce that Assistant Profs. Lisa Everett and Deniz Yavuz have been promoted to Associate Professor with tenure.

Honors have come to our faculty:

- Prof. Susan Coppersmith was awarded a Vilas Professorship: she is now the Robert Fasnacht Professor of Physics.
- Prof. Gary Shiu was named a Fellow of the American Physical Society.

Congratulations – hard work rewarded!

There have been many exciting developments on the research front. I'll just mention 3 large projects. IceCube, our cover story, is now going great guns and has made major discoveries about the anisotropy of cosmic rays (<http://www.news.wisc.edu/18256>). It is headed by Prof. Francis Halzen. The Madison Plasma Dynamo Experiment in Sterling Hall has taken delivery of its main vessel, a 3-meter diameter

hollow aluminum sphere. The experiment will study how magnetic fields are generated in stars and planets (<http://www.news.wisc.edu/releases/16787>). The PI is Prof. Cary Forest. Work has started on the Atomic Qubit Array: 64 neutral-atom qubits that will compose the world's largest quantum computer. It has a 5-year completion schedule and involves 3 academic institutions and 5 companies. It is directed by Prof. Mark Saffman.

The 11th Annual Awards Banquet was held in May 2011. The generosity of our alumni now allows us to give out many awards to outstanding students. A description with pictures can be found on p.7. We gave the Distinguished Alumni Award to Tom O'Brian. Tom graduated from the department with his Ph.D. in 1991, studying with Prof. Lawler. He has gone on to become the Chief of the NIST Quantum Physics Division, Chief of the Time and Frequency Division, and finally the Director of the NIST Boulder Lab. We gave the Distinguished Service Award to our own Prof. Chun Lin. Chun's many decades of outstanding research and teaching had already been recognized with the awarding of the John and Abigail Van Vleck Professorship. The Distinguished Service Award recognized his very substantial financial contributions to the department.

Whether you are an alumnus, friend, employee, or student, we appreciate your interest in and loyalty to the University of Wisconsin Physics Department. We wish to include a substantial section of alumni news in future newsletters. To do that, we need to hear from you – please just keep us up to date on what you are doing. Also, send along any memories or anything else that

people would like to read. The contact information is on the cover. You can also donate to the Physics Department online by going to [www.physics.wisc.edu/giving/index.html](http://www.physics.wisc.edu/giving/index.html).

If you wish to consult with a UW Foundation development officer on future gifts or other options, including estates, trusts, gifts-in-kind, or planned giving please contact Dani Lockett at 608 265-2713 or [dani.lockett@supportuw.org](mailto:dani.lockett@supportuw.org)

I sincerely thank our generous alumni and friends who have financially supported the Department. This support is truly our margin of excellence.

## Faculty Updates

**Promotions:** Ice Cube Experimentalist **Teresa Montaruli** was promoted to the rank of professor. Phenomenologist **Lisa Everett** was promoted to associate professor with tenure. Atomic Physics Experimentalist **Deniz Yavuz** was promoted to associate professor with tenure.

**Awards:** Professor **Sue Coppersmith** was awarded a Vilas Professorship: she is now the Robert Fasnacht Professor of Physics. Professor **Gary Shiu** was named a Fellow of the American Physical Society.

**Retirements:** Professor **Lou Bruch** and Professor **Lynn Knutson**.

**Departures:** Professor **Teresa Montaruli**, University of Geneva and Professor **Tao Han**, University of Pittsburgh.

**Sabbaticals:** Professor **Baha Balantekin** and Professor **Peter Timbie**.

**Current Searches:** The Department of Physics is currently doing faculty searches in the areas of Astroparticle experimental, Particle Theory, and Plasma experimental.

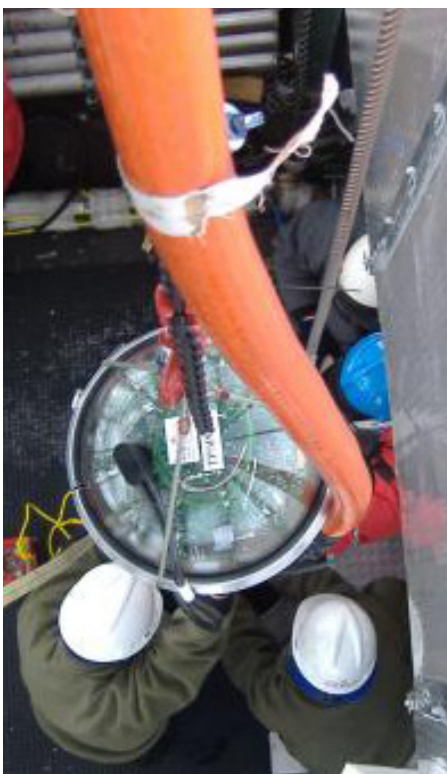
## IceCube Neutrino Observatory

# Construction & Collaboration

Following a decade of planning, designing, and construction, the IceCube Neutrino Observatory was completed at the South Pole on December 18, 2010. The date marks an end and a beginning for the project; the end of construction, and the beginning of full data-taking capacity for IceCube.

It has been an incredible journey, creating the world's largest neutrino detector. This article covers development and construction of the mammoth instrument, measurements and results from the detector, and how IceCube is providing excellent opportunities to graduate students.

Neutrino detectors characteristically need to be housed in stable, dark, large spaces. They can be found in bodies of water, caves, or man-made structures. IceCube uses a cubic kilometer of ice at the South



Pole to house 5,160 digital optical modules, or DOMs, that function as the "eyes" of the detector. They see the flash of blue Cherenkov radiation that is released when a neutrino interacts with a nucleus in the ice and produces a muon. Each DOM is equipped with a photomultiplier tube that records information about neutrinos and muons, digitizes it, and sends it to the surface lab.

Building IceCube at the South Pole posed unique challenges. The design required that the DOMs be embedded in the ice to depths of nearly two miles. To accomplish that, the UW-Madison Physical Sciences Laboratory designed and built the Enhanced Hot Water Drill, a marvel of engineering, a piece of equipment that easily drilled through the snow and ice using pressurized hot water.

Inside of each hole, a "string" of cable containing 60 DOMs was deployed. Drilling and deployment teams were sent to the South Pole during the austral summers beginning in 2004 to construct IceCube.

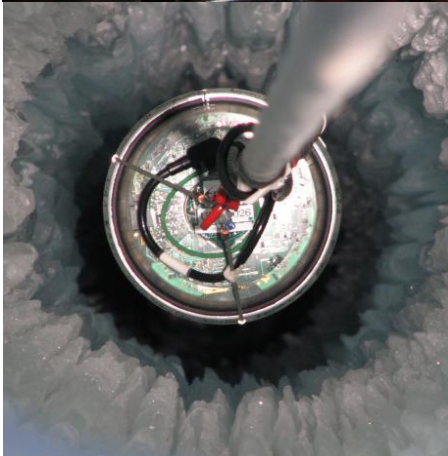
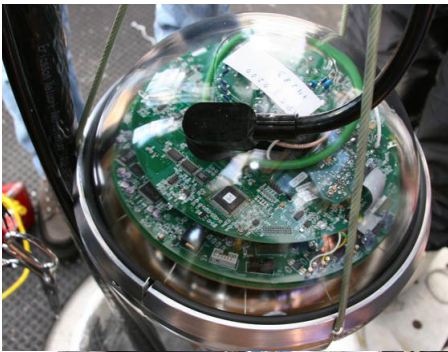
IceCube is the product of many individuals, institutions, and agencies. UW Physics Professor Francis Halzen was the first to propose the idea. Through partnerships with other researchers, the seeds of IceCube were developed in the Antarctica Muon and Neutrino Detector Array, or AMANDA. Following an award of National Science Foundation (NSF) funding, the IceCube Collaboration was born and now includes over 200 researchers from 39 institutions in 7 countries. NSF continues to be the major funder, with additional funds from Germany, Belgium, Sweden, Switzerland, and Japan.

## Measurements & Results

Although the detector was completed within the last year, it has been taking data since 2005 when the first of 86 strings was commissioned. Now that it has reached full capacity, researchers look forward to a "higher resolution" view of the Universe. Currently, gamma-ray bursts (GRBs) as potential neutrino sources, cosmic ray anisotropy, sterile neutrinos, and a collection of calibration checks are being investigated or developed at UW-Madison. As with many other neutrino facilities, the possibility of unexpected discoveries motivated the construction of an IceCube design with the widest science reach.

One of the most intriguing objects IceCube is studying is gamma-ray bursts (GRBs). They are the most powerful explosions in the universe. For a few brief seconds, these mysterious objects can outshine the entire galaxy by a billion times. They may also be the solution to the century-old puzzle: the sources of the highest energy cosmic rays, particles a hundred million times more energetic than can be produced on Earth.

If GRB's are the sources of cosmic rays, interactions of the new-born cosmic rays with the intense gamma rays around the burst should produce neutrinos—a "smoking-gun" signature of their production. These neutrinos should be visible to IceCube. Seeing them would provide the first confirmation that GRBs are the cosmic ray sources. If these neutrinos are not detected, it will suggest that cosmic rays are produced in some other source. In recently published results (April PRL), IceCube has become the first instrument able to probe this question.



In addition to being a neutrino detector, IceCube is also sensitive to cosmic rays, charged energetic particles from outer space that constantly bombard the Earth. Almost 100 years after their discovery, it is still unknown where in the Universe these particles originate and how they are accelerated to high energies. The remnants of supernova explosions are likely candidates for the origin of Galactic cosmic rays, but there is still no “smoking gun” that links the cosmic rays directly to their sources. Part of the problem is that cosmic rays are charged particles, mostly protons and helium nuclei, and their arrival directions are scrambled in Galactic magnetic fields on the way from the source to us.

IceCube detects cosmic rays through the muons that are produced when they interact in the atmosphere above the South pole. IceCube data has recently revealed anisotropy in the arrival direction distribution of cosmic rays that indicates that these particles are not completely scrambled. Like similar anisotropy detected earlier by cosmic ray experiments in the northern hemisphere, the structures seen by IceCube appear on several scales: a part-per-mille “large scale” component, with more cosmic rays coming from one half of the sky when compared to the other half, and a “small scale” component, in which the excess regions are about 10 times weaker and smaller in size.

The origin of the observed anisotropy remains unknown. It is possible that we see one (or more) nearby sources of cosmic rays through the “lens” of the magnetic fields between the source and us. This possibility is supported by a recent measurement of the cosmic ray energy spectrum by the air shower array covering the ice above the in-ice detector. The spectrum seems to show small “ripples,” possibly the effects of nearby sources modulating the otherwise featureless cosmic ray spectrum.

The possibility of IceCube revealing the presence of sterile neutrinos in the atmospheric neutrino beam was first investigated by John Bahcall. After seeing “interesting indications” from short-baseline experiments and reactor data, as well as evidence for additional degrees of freedom in the energy density of the Universe, we are revisiting sterile neutrinos with renewed interest. Detecting more than 200 neutrinos per day, IceCube has an unmatched sensitivity that is only limited by our understanding of the systematics of the detector.

Investigating GRB’s and cosmic rays offers potentially dynamic results, but there are other, more mundane aspects of the detector data that have enabled researchers to develop important calibration checks. Cosmic ray data is checked for a solar dipole anisotropy caused when Earth moves around the sun. Similar to the moon shadow present in neutrino point source analysis, the solar dipole provides an important confirmation of experimental sensitivity.

### Training Scientists

The ability to make new measurements and investigate cosmic phenomenon in a new way are central goals of the IceCube project, but there is another, more personal goal: training future scientists. IceCube at UW-Madison has supported over 50 physics graduate students and post-docs, visiting students, undergrads, and engineering and computer science students. Over the years, about ten students have been sent to the South Pole construction site to help with testing DOMs, checking computer systems, or general labor.

Recently, the IceCube Research Center (IRC) started a new fellowship program named after the late John Bahcall, which provides a stipend and materials funding to two outstanding scientists for up to five years. The Bahcall Fellowship enables IceCube to recruit some of the best

and brightest young researchers in particle astrophysics. The first two recipients were announced earlier this summer and have now joined the IceCube team in Madison. Programs like this, combined with the unique possibility of travel to the South Pole, make IceCube a unique and attractive project to work for.

The IceCube Neutrino Observatory is not the only interesting project maintained by the IRC, a UW-Madison center that handles administrative and organizational tasks for the international IceCube Collaboration. Other astrophysics projects under the umbrella of the IRC are the High Altitude Water Cherenkov Experiment (HAWC), the Askaryan Radio Array (ARA), DM-Ice, and Pierre Auger Cosmic Ray Observatory. Faculty and graduate students work on these projects as well. ARA and DM-Ice are extensions of IceCube at the South Pole, HAWC maintains a site in Mexico, Auger in Argentina.

## Conclusion

In April of 2011, the final DOMs of the IceCube array were integrated into the array and began taking data. Preliminary information has been intriguing, and the collaboration looks forward to new discoveries, on-going exploration of mysterious cosmic events, and continuing to recruit and train high quality students and researchers.



## UW Physics Department

# What's New

### The Physics Library

The Physics Library continues to be a popular spot for studying on campus. In the 2010-2011 academic year we had 38,752 visitors and checked out nearly 6,500 books. In 2009 we were able to acquire new furniture, including more comfortable seating with a generous grant from the UW Parents Fund.

The Physics Library is currently hosting a new exhibit. From Earth to the Universe is a collection of exceptionally beautiful and fascinating astronomical images from a wide range of sources, spanning major research observatories to accomplished local amateurs. UW Space Place has produced a new traveling exhibit from the collection, which will be open for viewing in the Physics and Astronomy libraries through the end of the semester. For more information see [www.fromearthtotheuniverse.org/](http://www.fromearthtotheuniverse.org/) and <http://spaceplace.org>.

The Physics Library Fund was established in 2008 for the acquisition of books and other materials related to physics. The Physics Library's collection has been strongly affected by dramatic increases in the price of materials. The growth of the endowment will help assure the care and continued growth of the Physics Library collection. We invite those interested in supporting the physics collection at UW-Madison to contribute to this endowment. Please make your check payable to UW Foundation, Account #12906418 and send to US Bank Lockbox, PO Box 78807, Milwaukee, WI 53278-0807.

### The UPS Club

The University Physical Society (UPS), also known as the Physics Club, is an organization for students interested in physics and related fields. The Physics Club has over 100 active members who attend events such as seminars, tours, trips, and socials. Physics Club volunteers offer nearly twenty hours a week of free drop-in tutoring to students in introductory physics classes. The club room (2328 Chamberlin Hall) is home to events and is used as a study room and a place to socialize between classes. It contains a wealth of physics resources, computers, a new couch, a fridge, a microwave, and many other conveniences for its members. Popular events include movie nights, potlucks and game nights. This year, the club's outings will include a trip to UW-Madison's Synchrotron Radiation Center this fall as well as a trip to Argonne National Lab this spring.

## UW Physics Department

# 2011 Physics Awards Banquet

The 2011 Physics Physics Banquet & Awards Ceremony to honor the Department Award Recipients and Alumni Fellow was held on Friday, April 29, 2011 at the Fluno Center. We honored our award winners with a reception, dinner, and awards ceremony for the family and friends.

### Undergraduate Awards

#### Fay Ajzenberg-Selove

Jessie Otradovec (Physics)

#### Dr. Maritza Irene Stapanian Crabtree

Blaine Law  
Jessie Otradovec  
Nadia Qutaishat  
Sara Stanchfield  
Aaron Swander  
Adam Wright

#### Bernice Durand Research Scholarship

Carli Peters

#### Henry and Eleanor Firminhac

Danny Jones  
Alexandra Schroeder

#### L. R. Ingersoll Prize Spring 2009-2010

Da Yin (103)  
Yinshan Chen (104)  
Ke Chu (201)  
Yaming Jiang (202)  
Tyler Will (207)  
Dana Bellissimo (208)  
Georgios Stratis (248)

#### Fall 2010-2011

Linbailu Jiang (103)  
Andrew Wiederhold (104)  
Xiaoyi Qu (201)  
Zhiyun Jiang (202)  
Yicheng Li (207)  
Leah Alstad (208)  
Azeem Zaman (247)

#### Liebenberg Research Scholarship

Craig Price

#### Albert Augustus Radtke Scholarship

Audra Amasino  
Scott Moe  
Rich Pang  
Antonio Puglielli



Baha Balantekin and Fay Ajzenberg-Selove Award winner Jessie Otradovec.



Baha Balantekin and L. R. Ingersoll Prize winners for Fall 2010-2011: Andrew Wiederhold (104), Linbailu Jiang (103), Xiaoyi Qu (201), and Yicheng Li (207).



Baha Balantekin and Dr. Maritza Irene Stapanian Crabtree Award winners: Adam Wright, Jessie Otradovec, Aaron Swander, Blaine Law, Nadia Qutaishat, Sara Stanchfield.



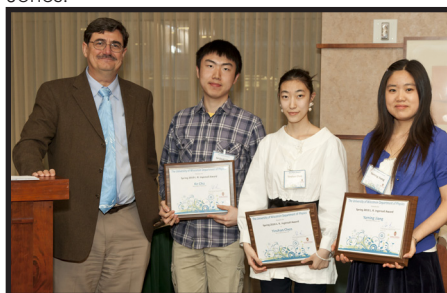
Baha Balantekin and Albert Augustus Radtke Scholarship Award winners Scott Moe, Antonio Puglielli, and Audra Amasino.



Baha Balantekin and Henry and Eleanor Firminhac Physics Undergraduate Scholarship winners Alexandra Schroeder and Danny Jones.



Baha Balantekin and Joseph R. Dillinger Award for Teaching Excellence winner Valerie Plaus.



Baha Balantekin and L. R. Ingersoll Prize winners for Spring 2009-2010: Ke Chu (201); Yinshan Chen (104); and Yaming Jiang (202).



Baha Balantekin and Phyllis Jane Fleming Graduate Student Support Fund winner Kara Maller.



## Graduate Awards

### Joseph R. Dillinger Award for Teaching Excellence

Valerie Plaus

### Phyllis Jane Fleming Graduate Student Support Fund

Kara Maller

### Elizabeth Hirschfelder Award

Emily Barrentine  
 Meghan McGarry  
 Isobel Ojalvo  
 Valerie Plaus  
 Chiu-Tien Yu

### Karl Guthe Jansky and Alice Knapp Jansky Family Graduate Award

Kelsey Morgan

### Emanuel R. Piore Award

Chien Yeah Seng (Fall 2010)  
 Fangzhou Zhang (Fall 2010)  
 Isobel Ojalvo (Spring 2011)

### Departmental Awards

#### Best TA

Zach De Land (Spring 2010)  
 Jacob Feintzeig (Fall 2010)  
 Michael Wood (Fall 2010)

#### Rookie of the Year

Nicole Vassh

## Alumni Awards

### Distinguished Alumni Award

Thomas R. O'Brian

### Distinguished Service Award

Chun Lin



Baha Balantekin and Elizabeth Hirschfelder Award winners Emily Barrentine, Chiu-Tien Yu, Isobel Ojalvo, and Valerie Plaus.



Baha Balantekin and Departmental Awards Zach De Land (Best TA, Spring 2010), Michael Wood (Best TA, Fall 2010), and Jacob Feintzeig (Best TA, Fall 2010).



Baha Balantekin and Karl Guthe Jansky and Alice Knapp Jansky Family Graduate Award winner Kelsey Morgan.



Baha Balantekin and Distinguished Alumni Award winner Thomas R. O'Brian.



Baha Balantekin and Emanuel R. Piore Award winners Isobel Ojalvo (Spring 2011), Chien Yeah Seng (Fall 2010), and Fangzhou Zhang (Fall 2010).



Baha Balantekin and Distinguished Service Award winner Chun Lin..

## 2012 Physics Banquet & Awards Ceremony

The 2012 Physics Banquet is scheduled for Friday, May 4, 2012 at the Fluno Center.

To view more photos of last year's event go to:  
[www.physics.wisc.edu/admin/banquet/](http://www.physics.wisc.edu/admin/banquet/)

For scholarship and award information for 2012 go to:  
[www.physics.wisc.edu/awards/](http://www.physics.wisc.edu/awards/)

## UW Physics Students

## Degrees Awarded

## Undergraduate

**Astronomy–Physics**

**Summer 2010**  
Birdsall, Ryan (BS)

**Fall 2010**  
Kaczmarek, Jane Frances (BS)  
Mast, Nicholas Glenn (BS)

**Spring 2011**  
Cardoso, Rogerio Fernando (BS)  
Finzell, Thomas (BS)  
Hartwick, Victoria Leigh (BS)  
Miller, Jacob James (BS)  
Reese, Daniel Tyler (BS)  
Schild, Justin Michael (BS)

**Physics**

**Summer 2010**  
Birdsall, Ryan (BS)

**Fall 2010**  
Kaczmarek, Jane Frances (BS)  
Mast, Nicholas Glenn (BS)

**Spring 2011**  
Brookman, Michael William (BS)  
Cardoso, Rogerio Fernando (BS)  
Colon, Dylan Patrick (BS)  
Daun, Mitchell Keith (BA)  
De La Rosa Gomez, Alejandro (BS)  
Dong, Xi (BS)  
Finzell, Thomas (BS)  
Graves, Adam Michael (BS)

Holzer, Benjamin Allen (BS)  
JaraAlmonte, Jonathan Marc (BS)  
Lee, John Greendeer (BS)  
Madajczyk, Bradley William (BS)  
Miller, Jacob James (BS)  
Moe, Scott Andrew (BS)  
Ocepek, Christina Marie (BS)  
Reese, Daniel Tyler (BS)  
Schenck, Benjamin Robert (BS)  
Schild, Justin Michael (BS)  
Smith, Nathaniel P (BS)

**Summer 2011**  
O'Connor, Allan Pray (BS)  
Wang, ChihChien (BS)  
Warns, Matthew John (BS)

## Graduate

**Master's Degrees**

**Summer 2010**  
Cho, Junghun  
Collins, Cami  
Eilerman, Scott  
Gamble, John  
Garcia, Camilo  
Koliner, Jonathan  
Plaus, Valerie

**Spring 2011**  
Dong, Zhe  
Hernandez, Tomas  
Liu, Zhen  
Triana, Joseph  
Van Bael, Bjorn  
Yang, You Ming

**Summer 2011**  
Hardy, Lisa  
Morgan, Kelsey  
Novakovic, Bozidar  
Rudinger, Kenneth

**PhD Degrees**

**Fall 2010**  
Andeen, Karen Grace (Advisor: Karle) Post Doc. Rutgers University  
Burke, Bonita (Advisor: Hegna) M.I.T. Lincoln Laboratory  
Burke, David Ryan (Advisor: Forest) M.I.T. Lincoln Laboratory  
Green, Jonathan Tyler (Advisor: Yavuz) Post Doc. Florence, Italy  
Grullon, Sean (Advisor: Karle) NIH - Genetics Lab  
Hannum, David (Advisor: Forest) NSF Fellowship in L.A.

Haque, Sheikh Shajidul (Advisor: Hashimoto) Visiting Assistant Professor at Colorado State University  
Hatch, David Robert (Advisor: Terry) Post Doc at Max Planck Institute for Plasma Physics in Germany  
Kim, Chulki (Advisor: Blick) Samsung Advanced Institute of Technology  
Magee, Richard McClain (Advisor: DenHartog) Post Doc. West Virginia University  
Miller, Matthew Charles (Advisor: Sarff) Post Doc at Auburn University  
Panyajirawut, Pongladda (Advisor: Rzchowski) Government of Thailand

**Spring 2011**

Corliss, Jason (Advisor: Lawler) Post Doc at UW Madison  
Dumm Jonathan Paul (Advisor: Montaruli) Post Doc. University of Minnesota  
Lewis, Ian Michael (Advisor: Han) Brookhaven National Lab  
Peng, Weina (Advisor: Eriksson) Post Doc. University of Texas at Austin  
Proite, Nicholas Anthony (Advisor: Saffman) Engineer at Alfalight  
Rao, Yongyan (Advisor: Everett) Quantitative analyst at Deloitte and Touche LLP  
Simmons, Christie (Advisor: Eriksson) Post Doc. M.I.T.  
Yencho, Brian Michael (Advisor: Barger) Post Doc University of Barcelona Institute of Cosmos Sciences

**Summer 2011**

Anderson, Michael Brandt (Advisor: Dasu) Software Engineer at Qualcomm, Austin, Texas

Cook, Peter Laurance (Advisor: Himpfel) Tenure Track Faculty at UW Superior  
Felker, David Andrew (Advisor: Rzchowski) Epic Systems  
Gavin, Ryan Donahue (Advisor: Petriello) Post Doc ETH Zurich  
Glatzmaier, Michael James (Advisor: Ramsey-Musolf) Post Doc at the University of Kentucky  
Grogg, Kira Suzanne (Advisor: Smith) Post Doc at Harvard Medical School/ Massachusetts General Hospital  
Lancor, Brian Robert (Advisor: Walker) Post Doc at UW Madison  
Lazaridis, Christos (Advisor: Smith) Post Doc UW Madison  
Leonard, Jessica Lynn (Advisor: Smith) Post Doc UW Madison  
Malkus, Annelise (Advisor: Balantekin) Post Doc at University of North Carolina  
McGuirk, Paul (Advisor: Shiu) Post Doc Cornell University  
Reusch, Joshua Adam (Advisor: Forest) Post Doc at UW Madison  
Smith, Kurt William (Advisor: Terry) Scientific Software Developer at Entthought  
Stuart, Alexander James (Advisor: Everett) Post Doc at Southampton University, England  
Weinberg, Marc Gabriel (Advisor: Smith) Post Doc at Florida State University working on CMS  
Zhou, Dong (Advisor: Joynt) Post doc at Yale University

## UW Physics Graduate Students

# Admissions

### Fall 2011 Admissions

Total of 23 students

**Nicholas Brewer**  
UW-River Falls  
Yavuz—AMO

**Carson Cook**  
University of Wisconsin-Madison  
Anderson—Nuclear

**Daniel Crow**  
Middlebury College  
Joynt—Condensed Matter

**Daniel Enderich**  
Michigan State University  
Eriksson—Condensed Matter

**Todd Garon**  
Reed College  
Chung—Undecided

**Huaike Guo**  
Peking University  
Everett—Particles/High Energy

**Andrew Hard**  
University of Chicago  
Wu—Particles/High Energy

**Sophia Henneberg**  
Johan Wolfgang Goethe Universitat  
Hegna—Plasma

**Taylor Klaus**  
University of Illinois at Urbana-  
Champagne  
McDermott—Quantum Computing

**Aaron Levine**  
Rice University  
Dasu—Particles/High Energy

**Andrew Loveridge**  
Northwestern University  
Everett—Astrophysics

**Ming-Yuan Lu**  
National Taiwan University  
Karle—Particles/High Energy

**Jason Milhone**  
Cornell University  
Forest—Plasma

**Tor Ole Odden**  
St. Olaf College  
Saffman—Condensed Matter

**Thomas Perry**  
Union College  
Herndon—Astrophysics

**Eric Poppenheimer**  
University of California Davis  
Eriksson—Condensed Matter

**Leonardo Rivera**  
University of Puerto Rico  
Wieben—Medical Physics

**Brendan Shanahan**  
University of Dayton  
Sarff—Plasma

**Yuriy Sizyuk**  
Illinois Institute of Technology  
Perkins—Condensed Matter

**Joseph Suttle**  
Rice University  
McDermott—Condensed Matter

**Moriah Tobin**  
Reed College  
Heeger—Particles/High Energy

**Lauren Wielgus**  
Tufts University  
Maruyama—Astrophysics

**Vladimir Zhdarkin**  
University of Wisconsin-Madison  
Boldyrev—Plasma

## Third Year Physics Graduate Students

# Class of 2008



Graduate students (left to right) Leon Maurer, Phil Johnson, Tien-tien Yu, John Gamble, and Scott Eilerman take the audience to the magical world of "The Wizard of Madison," a short musical performed at the 2010 holiday colloquium.

Each Fall semester, the third-year graduate students host the annual Department of Physics Holiday Colloquium. There is no famous speaker, no cutting-edge topic, but somehow every year hundreds of people are in attendance. The reason: right under their advisors' collective noses, the third-years are tasked with writing, directing, hosting, and starring in a two hour comedy show. Last year was our turn, and somehow, despite our preliminary exams and research, we managed to cobble something together. When all was said and done, we had accumulated fourteen video shorts, a live 'game show', a two-act musical, and many mixed-media interludes. As is customary, we served free pizza to our eager onlookers, along with a special, home-brewed beer honoring UW Plasma Physics research scientist Abdulgader Almagri. In case you missed the fun, the show is posted on the web in its entirety at: [www.youtube.com/watch?v=AB2-0WyVQYs](http://www.youtube.com/watch?v=AB2-0WyVQYs)

## UW Physics Department

## In Memoriam

**William F. "Jack" Fry**

July 18, 2011

Professor Emeritus William F. "Jack" Fry, passed away at his home in Madison, Wisconsin. He was born Dec. 16, 1921, at the family farm on Scotch Ridge, south of Carlisle, Iowa. He graduated from Carlisle High School in 1939, and from Iowa State University with a B.S. in electrical engineering in 1943, followed by graduate work at George Washington University, Washington, D.C. He received his Ph.D. in physics from Iowa State University in 1951 and was a post-doctoral fellow at the University of Chicago 1951-1952.

During World War II he was a commissioned naval officer, stationed at the Naval Research Laboratories in Washington, D.C., where he led the research on jamming devices for guided missiles. Then on to the White Sands, New Mexico rocket site, where he was in charge of researching German V-2 rockets.

Dr. Fry was Professor of Physics at the University of Wisconsin from 1952 to 1998. He was an experimental high energy physicist at the University and pioneered the astrophysics program. He also established physics programs at the University of Padova and Milan University in Italy in 1957. He was a Guggenheim Scholar and Fulbright Lecturer and served as a consultant to the International Atomic Energy Commission.

He spent over four decades in violin acoustical research, uncovering the secrets of Stradivarius. His accomplishments in violin research are recognized in books and film, and are detailed in a scientific video book he completed last year. Jack was an avid historian who collected Italian manuscripts from the 12<sup>th</sup> century through the Fascist period during his extensive travels in Italy. He donated over 40,000 books and documents to the University of Wisconsin Library, making the largest collection of Italian Fascist-era documents

available to scholars worldwide.

He was preceded in death by his parents, Will and Flossie Fry; brother, Perry, wife, Sigrid; and son, David Fry. He is survived by his wife, Audrey; brothers, John (Janie) Fry, Springfield, Ore., Harry (Phyllis) Fry, Orrville, Ohio; daughter, Diane (Mark) Siegel, Atlanta, Ga.; stepdaughter, Catherine Woodward (Joe Meisel), Madison; and stepsons, Erik and Leif Tesdell, Des Moines, Iowa.

**Hakki Ögelman**

September 4, 2011

Dr. Hakki Ögelman, renowned astrophysicist and professor at the University of Wisconsin-Madison, passed away peacefully in Austin, Texas after battling cancer for several months. He was 71 years old. He was born in July 1940 in Ankara, Turkey. He attended Robert College in Istanbul before furthering his education in the U.S. He received his B.S. at DePauw University, and his M.S. and Ph.D at Cornell, in 1966. Dr. Ögelman taught physics at the Middle East Technical University in Ankara, Turkey and conducted research at the Max-Planck Institute in Germany before relocating to the University of Wisconsin-Madison, where he has been Professor of Physics since 1991. He was previously a research scientist at NASA's Goddard Space Flight Center, a post doctoral fellow in Australia at the University of Sydney, and the Dean of Basic Sciences at Çukorova University in Adana, Turkey.

Dr. Ögelman was a member of the Turkish Academy of Sciences. He served as a member of the executive Science Board for the Scientific and Technical Research Council of Turkey from 1976 to 1984. He also represented Turkey on international science councils and co-operations and served on NASA committees and working groups. Dr. Ögelman was awarded the Sedat Simavi Prize in 1988, and the Turkish Scientific and Technical Research Council Prize in

1991. He was an expert on the physics of neutron stars and worked on several topics in modern astrophysics. He was instrumental in establishing the Turkish National Observatory.

Dr. Ögelman loved music, literature, sports, and was very concerned about finding a sustainable solution to the world's energy needs. He was a competitive wrestler in college and a black belt in judo.

He is survived by Kenan Ögelman of Austin, Texas, Nedim and Laura Ögelman of Alexandria, Va., and Roberto Ögelman of Madison. Dr. Ögelman also has two grandsons, Anders and Soren Ögelman, of Alexandria, Va.

**Murray Thompson**

April 5, 2010

Murray Alexander Thompson, age 75, died at his home on the Whangaparaoa Peninsula in New Zealand. He was born and educated in New Zealand before joining the Physics Department at UW-Madison as a post-doctoral student in 1962. He later joined the faculty and spent a total of 37 years in the Physics Department before retiring as an emeritus professor early in 2000.

From 1976 to 1989 he was the director of the Physical Sciences Laboratory, a University operated research and development facility near Stoughton. Murray was an enthusiastic and inventive leader of the laboratory. He delighted in and sought out the unique challenges presented to him by both University researchers and regional companies.

He is survived by Megan, his wife of 49 years; his sons, Bruce of Aliso Viejo, Calif., and David (Kristi) of Redmond, Wash.; and grandchildren, Colin and Kira.

## UW Physics

# Foundation Accounts

If you wish to make a donation to a specific fund, rather than a general area, please select from the following:

## Student Support Funds

**12691618**

### Fay Ajzenberg-Selove Undergraduate Scholarship

Provides encouragement for undergraduate women majoring in Physics, Astronomy or Physics-Astronomy to continue their careers in science. (Undergraduate)

**12693412**

### Dr. Maritza Irene Stapanian Crabtree Undergraduate Scholarship

Provides assistance to undergraduate students based on merit and need. (Undergraduate)

**12693561**

### Bernice Durand Research Scholarship

Promotes meaningful undergraduate research opportunities, plus supports and encourages women and ethnic minorities as undergraduate majors in the Departments of Physics and Astronomy. (Undergraduate)

**12693645**

### Henry & Eleanor Firminhac Scholarship

Provides assistance to students in Physics with financial needs. (Undergraduate or Graduate)

**12692683**

### Liebenberg Family Research Scholarship

Supports Physics, AMEP or Astronomy-Physics majors in summer research experiences. (Undergraduate)

**12692082**

### Cornelius P. & Cynthia C. Browne Endowed Fellowship Fund

Provides support to graduate students pursuing doctoral studies in the Physics Department. (Graduate)

**00000000**

### Jeff & Lily Chen Distinguished Graduate Fellowship (Contact department directly.)

Provides support to an outstanding graduate student in the department annually. (Graduate)

**12691359**

### Joseph R. Dillinger Teaching Award Fund

Provides recognition to an outstanding teaching assistant in the Department of Physics. (Graduate)

**12696175**

### Phyllis Jane Fleming Graduate Student Support Fund

NEW—Provides support for a female doctoral candidate in any year of training in physics. (Graduate)

**000000000**

### Ray & Anne Herb Distinguished Graduate Fellowships (Contact department directly.)

Provides support to two outstanding graduate students in the department annually. (Graduate)

**12693190**

### Elizabeth S. Hirschfelder Endowment

Supports women graduate students in Physics research. (Graduate)

**12693916**

### Karl & Alice Knapp Jansky Fellowship Fund

Provides funding to an outstanding graduate student interested in Astrophysics and Astronomy. (Graduate)

**12692106**

### Graduate Student Recruiting

Provides assistance in recruitment expenses of Physics graduate students. (Graduate)

**12696443**

### Special Physics Graduate Support Fund

NEW—Provides a number of awards as part of a financial aid package to new graduate students entering the department as teaching assistants. (Graduate)

## Other

**12694421**

### Barschall Enterprise Fund

Established in 2005 in honor of former Professor Heinz Barschall. Provides unrestricted-use fund for Chair in recruiting senior researchers to faculty.

**12694069**

### Friends of the Physics Ingersoll Museum

Currently provides funding for display upgrades and student staffing, with hopes to someday create an endowment for future needs.

**12691418**

### Elementary Particle Physics Institute

Provides funding for activities of the institute.

**12692106**

### Atomic Collision Research Fund

NEW—Encourages and supports research on atomic collision processes and their application to studies of weakly ionized gases in perpetuity.

**12694622**

### Physics Community-Building Fund

Provides funding for Chair in establishing and reaffirming a sense of community among the faculty, staff, students, and alumni of the Department.

**12906418**

### Physics Library Fund

Provides funding for the acquisition of books and other materials related to physics.

## Support Physics

## UW Foundation

Mail this form to: University of Wisconsin Foundation  
 US Bank Lockbox  
 PO Box 78807  
 Milwaukee, WI 53278-0807

My gift of \$ \_\_\_\_\_, payable to the **University of Wisconsin Foundation**, is enclosed.

Or charge my:  Master Card  VISA  American Express in the amount of \$ \_\_\_\_\_

Card Number \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_/ Expiration Date \_\_\_\_\_

Cardholder Name (As it appears on card --- Please Print): \_\_\_\_\_

Cardholder Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name: \_\_\_\_\_ Home Phone: ( \_\_\_\_\_ ) \_\_\_\_\_

Address: \_\_\_\_\_

City, State, ZIP: \_\_\_\_\_

For a description of all UW Foundation Physics Funds, go to: [www.physics.wisc.edu/giving/fund-details.html](http://www.physics.wisc.edu/giving/fund-details.html)

## I wish to designate my Gift to the following fund(s)

**Physics Newton Fund (#1269172)**—An unrestricted general fund—greatest need.

**Undergraduate Support—General (#1269172)**  
 To provide for undergraduate student special needs.

**Undergraduate Support—Specific**  
 Indicate fund name and number below. Select from list of “undergraduate” funds on previous page.

Fund Name: \_\_\_\_\_ Fund Number: \_\_\_\_\_

**Graduate Support—General (#1269172)**  
 To provide for graduate student special needs.

**Graduate Support—Specific**  
 Indicate fund name and number below. Select from list of “graduate” funds on previous page.

Fund Name: \_\_\_\_\_ Fund Number: \_\_\_\_\_

**Other**  
 Indicate fund name and number below. Select from list of “Other” funds on previous page.

Fund Name: \_\_\_\_\_ Fund Number: \_\_\_\_\_

- Should you prefer to make your donation electronically by credit card on a secure server, please go to: [www.physics.wisc.edu/giving/fund-details.html](http://www.physics.wisc.edu/giving/fund-details.html). Click on the fund in which you are interested for information and then complete the UW Foundation secure site form.

- If you wish to consult with a UW Foundation Development officer on your gift or other options including estates, trusts, gifts in kind, or planned giving, please call or email: Dani Luckett, University of Wisconsin Foundation at 608-265-2713 or [dani.luckett@supportuw.org](mailto:dani.luckett@supportuw.org).





**University of Wisconsin Department of Physics**