Internationally renowned physicist and member of the National Academy of Sciences, Marlan O. Scully, who is best known for his work in theoretical quantum optics, has been named distinguished research academician of science and engineering at Baylor University.

Scully, who will relocate his research labs to the Baylor Research and Innovation Collaborative (BRIC), has made outstanding research accomplishments over his long career in the areas of quantum optics, laser physics and bioengineering. He wrote definitive textbooks on quantum optics and laser physics and has published his research in more than 700 articles in professional journals such as *Nature* and *Science*. He has also written for popular venues like *Scientific American* and *Physics Today*.

“Dr. Scully is truly a Renaissance researcher,” said Truell Hyde, Baylor University vice provost for research. “His knowledge and research interests span many fields, and we look forward to his continued research contributions here at Baylor.”

In addition to his membership in the National Academy of Sciences, Scully is a member of the Academia Europa, the Max Planck Society, and the American Academy of Arts and Sciences, among others. He has received numerous awards and honors including the Elliot Cresson Medal of the Franklin Institute, the Schawlow Prize of the American Physical Society, the Townes Medal of the American Optical Society, the Herbert Walther Award of the German Physical Society, and a Guggenheim Fellowship. He was recently appointed Loeb Lecturer at Harvard University.

“I am excited to become part of the Baylor community and explore the theological and philosophical implications of quantum mechanics, entropy and statistical time,” said Scully.

“Baylor is a unique, academically excellent Christian university, and I look forward to working with fellow researchers as Baylor reaches the next level of research excellence.”

Scully did his undergraduate work at the University of Wyoming and Rensselaer Polytechnic Institute and his master's and doctoral work at Yale University. He is a member of the faculties at Texas A&M University and Princeton University. He is the Herschel Burgess Chair and Distinguished Professor in the department of physics at Texas A&M and is the director of its Center for Theoretical Physics and the Institute for Quantum Science and Engineering. For the past decade, he has held a professorial position at Princeton.

Dr. Scully recently hosted a reception with members of the physics department to renew old acquaintances and meet newer members of the department.
News and Notes

Al Beck, Admissions and Advisement Coordinator of the Honors Program at Baylor University has written to let the many of us who serve as mentors for students working toward an Honors Thesis about changes to the program. Additional details are available on the Honors Program web site:

<table>
<thead>
<tr>
<th>New Honors Thesis Procedure</th>
<th>Old Honors Thesis Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students enroll in the variable hour class, HON 4V87, usually for 2 credit hours during each of their final two semesters (for a total of 4 hours)</td>
<td>Students enroll in four 1-credit-hour classes for the thesis, HON 4177, 4178, 4187, 4188</td>
</tr>
<tr>
<td>Students are placed into a section of HON 4V87 with their thesis mentor as faculty of record</td>
<td>Students are placed in a thesis section with Honors Program staff as faculty of record</td>
</tr>
<tr>
<td>Grades for the thesis are awarded by the thesis mentor at the end of each semester</td>
<td>Grades for the thesis are awarded by the Honors Program at the completion of the entire thesis project</td>
</tr>
</tbody>
</table>

A tentative schedule for high energy physics talks (usually held on Monday’s from 3:30 - 4:30 pm in Room A.202 of the BSB is now maintained at: [http://hep.baylor.edu/hatake/HEPseminar/](http://hep.baylor.edu/hatake/HEPseminar/)

The Graduate School wishes to recognize student travel for presentations of research enabled through research funds. Previously, the Graduate School counted only the presentations that they assisted in funding through their two travel assistance programs. They have now set up a mechanism by which we can inform the Grad School about research grant funded student presentations.

(See [http://www.baylor.edu/graduate/index.php?id=42281](http://www.baylor.edu/graduate/index.php?id=42281))

The department Graduate Program Director, Dr. Walter Wilcox, is continuing to work hard on recruiting students into our program. Two e-mailings have been distributed to 1,097 students. Our new Recruitment Open House is scheduled for Friday and Saturday, February 10 - 11, 2012.

Two graduate electives are being offered in the spring: PHY 6372, Elementary Particle Physics, and PHY 6374, Quantum Field Theory II. The former course has been re-established after a long absence in our schedule, and will be taught by Dr. Ken Hatakeyama.
Homecoming Events

November 4, 2011

Grand Opening of Zhenrong Zhang’s Scanning Tunneling Microscopy Laboratory

3:00 p.m., BSB C.161R

Homecoming Coffee

4:00 p.m. — 6:00 p.m.

BSB E.301

(Clock Tower Room)
Women in Physics

Dr. Linda Olafsen presented “Practical Quantum Mechanics: Semiconductor Materials for Mid-Infrared Lasers,” as one of the plenary speakers at the Conference for Undergraduate Women in Physics III: Materials Girls, hosted by the University of Nebraska-Lincoln October 20-22. She also was invited to participate in a career panel as part of the conference. (Four-month-old Susanna attended her second conference since her birth in June!)

The meeting turned out to be full of small-world moments. Former REU participants Natalie Walker (2010, a senior at Purdue University, Calumet) and Audrey Burkart (2011, a sophomore at Augustana College) presented posters on their Baylor research. Hannah Buchanan, a senior at the University of West Florida, has a brother-in-law completing his Ph.D. in political science at Baylor, and Chloe Renfro, also a senior at the University of West Florida, has been mentored by Dr. Jeffrey Olafsen’s brother, John. Both Hannah and Chloe presented talks on their liquid crystal research.

Linda also spent some time with one of our recent colloquium speakers, Dr. Gregory Snow from the University of Nebraska. He is spoke at Baylor earlier this fall on, “Recent Results from the Pierre Auger Observatory.”

Pictured Above: Hannah Buchanan, Natalie Walker, and Dr. Linda Olafsen at the recent Conference for Undergraduate Women in Physics at the University of Nebraska, Lincoln.

The first women in physics (and astronomy and astrophysics!) lunch of the academic year was held on October 12 at noon in E.234 of the BSB. The lunches are an informal time of conversation, usually lasting from 12 - 1:30 pm. Watch for the announcement of the next lunch. Female students just need to bring themselves—lunch will be provided!

Conferences for Undergraduate Women in Physics (CUWIP) are three-day regional conferences for undergraduate physics majors. The 2012 conferences will run Friday evening, January 13 through Sunday afternoon, January 15, 2012. For 2012, there will be six regional conferences; students are encouraged to apply to the nearest conference.

* Case Western Reserve, Cleveland, Ohio
* Texas A&M in College Station, Texas
* University of Washington, Seattle, Washington
* Stanford University, Stanford, California
* University of Tennessee - Knoxville, Tennessee
* Yale University, New Haven, Connecticut

In most cases, full support will be provided for room and board. Physics departments are strongly encouraged to provide support for travel; however, students should apply for travel reimbursement if their department is unable to support them. The application deadline is November 15, 2011. Announcement reproduced from Women in Physics (WIPHYS) listserv from APS.
Counterclockwise starting from above: Elizabeth Grace - daughter of Patricia Diamond; six posters now greet guests of the physics department with descriptions of the major research divisions among all of the faculty; John Vasut won the Master’s Division of the inaugural Soldier’s Angels Run for Remembrance - and placed fifth overall; Dr. Ari’s certificate of OSHA Lab Safety training; former Baylor REU student Audrey Burkart shows off her poster while attending the Conference for Undergraduate Women in Physics held in Lincoln, NE.
Out and About …

The Department benefits from the attendance of its faculty at a variety of University events. On Saturday, September 24, 2011, the University held the Parent-Faculty Coffee on the Burleson Quadrangle. In attendance from the physics department were Wickramasinghe Ariyasinghe, Daniel Bolton, Greg Benesh, Jay Dittmann, Randy Hall, Linda Kinslow, Lorin Matthews, Jeffrey Olafsen, Linda Olafsen, Dwight Russell, Yumei Wu and Zhenrong Zhang. Thank you all for your participation!

Dr. Daniel Bolton spoke at the High Energy Particle Physics Seminar on Monday, October 24, 2011. The title of his talk was, “The Impulse Approximation in Nuclear Pion Production.” The talk was a nice way to get to know the prior research interests of our newest colleague in the department.

Symmetry and the Standard Model, authored by Dr. Matthew Robinson, Karen Bland, Dr. Gerald Cleaver, Dr. Jay Dittmann, and Dr. Mario Serna, was published by Springer in September. The next two volumes in the series have been approved for publication.

Dr. Gerald Cleaver and Douglas Moore presented “String Landscape 101” to the Physics Department at Sam Houston State University on 25 October.

Drs. Gerald Cleaver, Lorin Matthews, and Dwight Russell, and graduate students Doug Moore and Jared Greenwald attended the Joint Fall 2011 Meeting of the Texas Sections of the APS, AAPT, and Zone 13 of the SPS, at Texas A&M University – Commerce, on October 6-8. Dr. Matthews presented a talk on “Coagulation of Dust Particles in Plasma,” with coauthors Jorge Carmona-Reyes, Victor Land, Qianyu Ma, Kristen Deline, Jonathan Perry, Brandon Doyle, and Truell Hyde. Douglas Moore presented “The Systematic Construction of FFHS Gauge Models” on October 7. Greenwald presented “On the Correlation of Extra MSSM Higgs to Stringent Flat Directions in Heterotic String Theory.”

Some highlights from a talk by one of the keynote speakers, Theodore Hodapp, APS Director of Education, Minority Bridge Program:

One way to increase the participation of minority students is to establish a study group for the class which meets at a published time. The instructor is available for questions (though perhaps not necessarily present). This expands participation beyond cliques.

An interesting statistic for graduate schools: women tend to have lower GRE physics scores than men, but they have a higher GPA in their graduate classes. No similar statistics are currently available for other minority groups.

Last May, in the Bledsoe-Miller Recreation Center in Waco, Jared Greenwald gave a presentation on physics to a class of high school age students who are part of a homeschooling co-op. The presentation was entitled: “Physics: Historical and Modern Perspectives”. Jared introduced to the class what physics is, its relationship to mathematics and its roots in ‘natural philosophy’. After a review of some of the key players in natural philosophy and physics, he discussed how our understanding of the universe has changed over time using the illustration of two examples: the divisibility of matter (atomic theory and the standard model) and the nature of light. In order to introduce what physicists do today, Jared reviewed some of the major subfields of physics and then presented an overview of major research areas. He also talked about how physicists go into many other fields outside of traditional physics and how the work of physicists has given us many of our current technologies. This November Jared will be speaking to the same group again, this time talking about the OPERA neutrino results following a review of some elementary particle physics and relativity as well.
Dr. James Karban has announced that Ms. Natalia Anderson has been hired to replace Patricia Diamond as Stockroom Manager. Natalia comes with a very strong background in chemistry and is a welcome addition to our staff. Among her other duties, Natalia will be inventorying chemicals in all the laboratories so most of you will eventually have the opportunity to meet with her. Please welcome her to Baylor and to the BSB. (And speaking of Patricia, her last day at the BSB was August 2, 2011. On August 23, 2011 her daughter, Elizabeth Grace was born around 3pm in the afternoon. She weighed 8 lbs 5 oz and was 20 inches long at birth. Both Patricia and Elizabeth are doing well).

Qianyu (Theresa) Ma successfully defended her doctoral dissertation on October 20, 2011. Her research project, Charging of Aggregate Grains in Astrophysical Environments, looked at the effects of grain charging by UV photoemission in the inner solar system and secondary electron emission at the heliopause. She will receive her Ph.D. degree in December. Congratulations, Theresa!

Dr. Jeffrey Olafsen was named the faculty representative at Baylor University for the Barry M. Goldwater Scholarship program. As the faculty representative, Dr. Olafsen will be holding a workshop on Tuesday, November 8, 2011 at 5 p.m. in room E.125 of the BSB.


During 9/23-10/1, B.F.L. Ward participated in the 2011 International Symposium on Radiative Corrections in Chennai, India (RADCOR 2011). The Symposium, the tenth in the series dating back to 1989, was sponsored by the International Center for Theoretical Sciences of the Tata Institute of Fundamental Research, Mumbai, India. At the Symposium, Dr. Ward gave an invited lecture on “Exact Amplitude-Based Resummation in Quantum Field Theory”, wherein he presented his new results on precision QCD for the LHC and on the calculation of the cosmological constant in his resummed quantum gravity theory. In addition, he participated in the International Advisory Board meeting for the RADCOR Symposium series, as he serves as a member of that Board.

On September 12, B.F.L. Ward was invited to visit the CERN TH Unit for 30 days in 2012, where his local expenses in Geneva, Switzerland will be supported by CERN. During his visits he will continue the development and application of his new IR-Improved DGLAP-CS theory to realize the precision QCD-AQED corrections for the physics required for the proper exploitation of the new data that is being collected by the LHC experimental programs.

John Vasut won the Master’s Division of the inaugural Soldier’s Angels Run for Remembrance Ultramarathon and placed fifth overall. The event, held during the night of September 10th and 11th, was run in honor of those who died in the 9/11 attack along with those who have fallen fighting for freedom since that date. He ran a total of 47 miles during the nine hour, eleven minute race.

Dr. Zhenrong Zhang received a $100,000 external grant from America Chemical Society Petroleum Research Fund (ACS PRF) Doctoral New Investigator grant program for 2012-2014.

Nancy Yu brought by a cake and some cookies to share with us as part of the celebration of her daughter, Anna’s one month birthday. Nancy shared that it is a Chinese tradition to celebrate the birth of a child on the one month anniversary of their birth.

We are planning to have a Department of Physics Thanksgiving Potluck lunch on Tuesday, November 22, 2011. Please see the attached flyer for more information, pull out your favorite recipe, and plan on attending before you leave for the Thanksgiving holiday.
### November 2011

<table>
<thead>
<tr>
<th>Sun</th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
<th>Sat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
<td>19</td>
</tr>
<tr>
<td>20</td>
<td>21</td>
<td></td>
<td>22</td>
<td>23</td>
<td>24</td>
<td>25</td>
</tr>
<tr>
<td>27</td>
<td>28</td>
<td>29</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### December 2011

<table>
<thead>
<tr>
<th>Sun</th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
<th>Sat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>18</td>
<td>19</td>
<td>20</td>
<td>21</td>
<td>22</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>25</td>
<td>26</td>
<td>27</td>
<td>28</td>
<td>29</td>
<td>30</td>
<td>31</td>
</tr>
</tbody>
</table>

- **Spring Term Begins January 9th**
- **1 PHY 4190 Final Talks 3:30pm E.125**

---

**Graduating Student Grades due by 5 pm today**

**All other grades due by 5 pm today**

**Commencement**

**Christmas Eve**

**New Year’s Eve**