Astronomy & Astrophysics grow majors

The Department of Physics has been growing its number of majors through a variety of recruitment and retention efforts. In addition, new degrees in Astronomy and Astrophysics are helping to expand the department’s undergraduate population. The most recent tally this fall puts the number of majors at a record of 61.

The numbers have shown a steady growth since the fall of 2006, when the department had a total of 20 majors. Since then, the department has (1) participated in creating a higher profile at campus-wide recruitment events, (2) worked to re-structure the undergraduate curriculum, (3) highlighted the expectation that every undergraduate be involved in a research experience as part of their degree, and (4) expanded the major options in the department with Astronomy and Astrophysics degrees — as well as engaged in campus-wide initiatives such as the Secondary Major program.

The faculty has not only met its goal of doubling the number of majors in the traditional physics degree - students majoring in Astronomy and Astrophysics now account for one-third of the total majors in the physics department. The total undergraduate population in the department has tripled in less than ten years! Sic’em Bears!
From the Chair ...

Dear Friends,

Greetings from the Baylor Physics Department! The fall semester began with cooler than normal August temperatures (for once). The 90s feel almost mild in the middle of August! It was exciting to welcome back faculty members from summer research and teaching activities. Besides travel to various U.S. locations, departmental faculty members performed research or gave talks in Australia, China, Great Britain, Switzerland, and elsewhere. It was truly an international summer!

We were very pleased to greet new undergraduate and graduate students this fall, and to see our returning students again. This year we added seven new graduate students—bringing our total graduate enrollment up to thirty-one. We were also excited to see twenty-two (22!) new freshman physics majors enter our classes. Combined with a similar number of new majors last year, we now have the largest number of undergraduate majors (61) we have had in my thirty+ years in the department! The expansion of our curricula is clearly paying dividends, with nearly a quarter of our majors now opting for astrophysics alone, and several others for astronomy.

We continue to turn out physics degrees steadily. Since last year at this time we have graduated two new PhDs and five with bachelor’s degrees. Our recently minted PhDs are Drs. Zhenbin (Ben) Wu and Yongqing (Steve) Huang. Our five B.S. graduates are all going on to graduate programs, four of them in physics!

The campus has been incredibly transformed since a year ago. The faculty houses in the old “Fort Faculty” section near Albritton House (the President’s residence) have been removed. What remains is largely a beautiful green space, with all of the old trees having been preserved. Along Bagby Avenue between 2nd and 4th streets stands the new East Village. Students moved in for the first time this fall. Along University Parks Dr. the route is being cleared (but that’s another story) for a pedestrian bridge across the Brazos River to . . . the new Baylor Stadium! The colossus now rises above the Law School, Mayborn Museum, and other buildings lining this side of the river. It will be a truly amazing facility when it opens in the Fall of 2014.

We again thank you for your interest and support. Please continue to pray with us that we honor God in the work of our Department, and that we accomplish goals that are pleasing to Him. We hope many of you will visit the Department when you return for Homecoming activities this year (October 18-19). More details will come in our next newsletter.

With warmest best wishes,

Greg Benesh, Professor & Chairman
**Provost’s Faculty Forum**

The Provost’s Faculty Forum is a series of weekly lunch conversations to promote transformational education at Baylor University. The Forum provides an opportunity for full-time faculty members across the university to gather and discuss innovative teaching. The theme for Fall 2013 is Learning Together.

Conversations will occur in the McMullen-Connally Faculty Center. Each conversation will open with brief remarks from a faculty colleague. A partial list of speakers is below. A buffet lunch will be provided compliments of the Provost’s Office.

Because of space limitations, advanced registration is required. Each conversation is limited to 18 participants. Please register now to ensure yourself a chance to participate in one or more of the Forum gatherings. Register at http://blogs.baylor.edu/atl/provost-faculty-forum/.

- **Tue, Sept. 10, 12:30** Elizabeth Davis, Provost, “Learning Together”
- **Thu, Sept. 19, 12:30** Anne-Marie Schultz, Philosophy and BIC, “Learning to Play Well with Others”
- **Tue, Sept. 24, 12:30** Alex Beaujean, Educational Psychology, “The Power of Positive Testing”
- **Wed., Oct. 2, 12:00** Marty Harvill, Biology, “Returning the Excitement to Science”

**Baylor joins Semester Online Partnership**

In fall 2012, I commissioned the Teaching, Learning and Technology Committee (TLTC), chaired by Dr. Rachelle Rogers in the School of Education, to research the current state of online higher education and offer proposals for the University’s engagement in technology-enhanced learning. The committee was made up of 19 of faculty and staff representing each academic unit and performed one of the finest examples of shared governance that I have seen. Dozens of additional faculty, staff and students participated on subcommittees and in focus groups that informed the committee’s excellent work. For that, I am truly grateful.

After a year-long examination, the committee issued its final report, “Engaging the Future of Higher Education,” which included a recommendation that Baylor University join 2U’s Semester Online consortium as a Charter Affiliate Partner. Today, I am pleased to announce that the University has signed an agreement to enter into this partnership.

Semester Online is the first undergraduate education initiative to offer online, for-credit courses taught by faculty at these consortium partners: Boston College, Brandeis University, Emory University, Northwestern University, the University of North Carolina at Chapel Hill, University of Notre Dame and Washington University in St. Louis. Joining Baylor as Charter Affiliate Partners are Southern Methodist University and Temple University.

In the meantime, I invite you to read the full TLTC report, which is available on the Provost’s website at http://www.baylor.edu/provost/doc.php/203521.pdf.

*Elizabeth Davis, Executive Vice President and Provost*
Graduate Student News

Editor’s Note: We thank graduate student Jeremy Kunz for bringing this information to the Editor’s attention.

Please be aware of changes in the Graduate School's dissertation and thesis requirements.

In response to inquiries from students and faculty at Baylor and in an effort to keep pace with changing trends in graduate education more broadly, the Graduate School has adopted a manuscript formatting option for dissertations and theses. These changes are intended to allow students, especially those in the STEM fields, to present their research in a way more consistent with disciplinary standards. [The hope is] that the additional freedom granted by the new policy will help students focus on research and writing relevant to their academic area and reduce the amount of revision required for final submission to BEARdocs and UMI.

The new guidelines were written in consultation with faculty at Baylor and [were] modeled after similar policies at other universities, including Cornell, Penn State, and Virginia Tech.

Please do not hesitate to contact me with any questions.

All the best,

Christopher M. Rios, PhD
Assistant Dean for Graduate Studies
Baylor University Graduate School

Graduate Students recognized for the gravity of their research

Douglas Moore and V H Satheeshkumar received an Honorable Mention in the 2013 Essay Competition by the Gravity Research Foundation (GRF) for their paper 'The fate of Lorentz frame in the vicinity of black hole singularity,' which will be published in the October 2013 GRF Special Issue of International Journal of Modern Physics D (IJMPD). Other physicists who received honorable mention this year include Stephen L. Adler, Tom Banks, Ted Jacobson, Shinji Mukohyama, T. Padmanabhan and Carlo Rovelli. Established in 1949, the GRF Essay Award is a prestigious annual competition for short essays describing the author’s original research in the fields of general relativity and quantum gravity.

Baylor has received such recognition once before when Dr. B. F. L. Ward, Distinguished Professor of Physics, earned an honorable mention for an essay on his Resummed Quantum Gravity in 2007.
Above left: The Vice-Chancellor of Cambridge University confers the PhD in physics degree on Matthew Benesh (proud parents Greg and Dana are seated in the background at the top of the picture).

Top right: Linda Olafsen contributed to a volume of essays by women leaders in science.

Left: Chava Baker’s grandson Ethan Yitzhak Baker Arguello was born August 18, 2013.

Right: A few current and former members of the Experimental High Energy Physics (HEP) group gather for lunch near Fermilab in Batavia, IL.

Left: Jeffrey Olafsen, supported by a summer sabbatical, attended the Complex Dynamics in Granular Systems workshop and conference in Beijing, China. Below: SEM photograph of a test device fabricated by Linda Olafsen as part of her LEF fellowship.
Out and About …

The department continues to have a strong presence in Commencement exercises on campus. Taking part as Marshals in the May ceremonies were Drs. Greg Benesh, Lorin Matthews, Jeffrey Olafsen, Linda Olafsen and Walter Wilcox. Drs. Jeffrey Olafsen and Linda Olafsen were Marshals at the August Commencement ceremony as well.

Prof. Jerry Cleaver presented a talk entitled "The Quirks of Quark Engines" at the Starship Congress conference in Dallas, Texas, Aug 15-18, attended by representatives of all the major pro-spaceflight organizations, including many NASA scientists and some U.S. military personnel. The conference was sponsored by Icarus Interstellar, a non-profit organization founded by Cleaver's Ph.D. graduate Richard Obousy. Andreas Tziolas, Ph.D. graduate of Prof. Anzhong Wang and Vice President of Icarus Interstellar, was also a primary coordinator of the conference. Cleaver was recently appointed as a sub-editor of the Journal of the British Interplanetary Society.

In May, Dr. Jay R. Dittmann gave an invited plenary presentation entitled Jet Physics at the LHC and the Tevatron at the LHCP 2013 conference in Barcelona, Spain. In his presentation, Dr. Dittmann summarized recent scientific results from five different experimental collaborations – CDF, D0, CMS, ATLAS, and ALICE. Also during the summer months, Dr. Dittmann attended a weeklong CMS collaboration meeting in Geneva, Switzerland and the "Snowmass on the Mississippi" Community Summer Study in Minneapolis, Minnesota. The summer study was a part of a long-term planning exercise for the high-energy physics community.

Randy Hall made his Off-Broadway debut on July 20 in a show called How to Be a New Yorker, a comedy revue playing at Sofia's Theatre in midtown Manhattan. Randy was picked from the audience to help out with one of the bits. He says that he didn't make a fool of himself, got a big laugh on an ad lib, and even got applause during the curtain call. He and his wife, Cathey, went to the show because it was co-written by and co-starred Margaret Copeland, a 2008 Baylor graduate. “We're so proud to see our Baylor kids go on to do great things,” said Randy.

Over this summer, Dr. Kenichi Hatakeyama, attended CMS Upgrade Week at DESY, Hamburg from June 3 to 7, and gave two presentations, CMS Week at CERN, Geneva, from July 8 - 12 where he gave an approval talk for "SUSY Results for Snowmass," Snowmass Energy Frontier Meeting at University of Washington, Seattle, from June 30 to July 3, where he gave a QCD working group summary talk "Snowmass on the Mississippi." and Community Summer Study in Minneapolis, Minnesota, and convened the QCD working group sessions.

Dr. Jeffrey Olafsen received sabbatical support for the summer of 2013 from Baylor University. He spent more than three weeks (5/29 - 6/23) in Beijing, China attending the Kavli Institute for Theoretical Physics China at the Chinese Academy of Sciences (KITPC/ITP-CAS) research program entitled, Complex Dynamics in Granular Systems, as well as the associated International Conference on Complex Dynamics of Granular Systems that coincided with the workshop from June 2 - 7. As part of the conference, Jeff gave a seminar entitled “Molecular Chaos in Driven Granular Gases” on June 4. For the workshop, Jeff presented some of his biologically related research on “Granular Engineering by Larval Neuroptera for Prey Capture.” The workshop was extremely beneficial for the opportunities it provided to interact with colleagues from China as well as other parts of the world including Japan, Taiwan, France, and Germany.
Out and About …

After returning from China, Jeff traveled to Sydney, Australia to attend the international meeting Powders and Grains, 2013 in July. The meeting brings together physicists and engineers from both academia and industry worldwide every four years and Jeff’s research was selected for a coveted oral presentation at the meeting.

Publications:


Professor Linda Olafsen has been traveling to the Microelectronics Research Center on the J. J. Pickle Research Campus of the University of Texas at Austin as part of her Laboratory Experience for Faculty fellowship from the National Nanotechnology Infrastructure Network (NNIN) Education program. The fellowship supports the project “Fabrication of Split-Ridge Interband Cascade Lasers” and complements her NSF-supported work on graphene on semiconductors.

Publications:


Yaobiao (Eric) Xia presented a poster at the Southwest Catalysis Society 2013 Spring Symposium held in Houston, TX in April. The title is “Reaction of Acetone on Oxidized TiO$_2$(110) Surface with Oxygen Adatoms”. Dr. Zhang presented an invited talk entitled “Adsorption and diffusion of acetone on rutile TiO$_2$(110)” at The 2013 TAMU-Princeton Summer School on Quantum Science and Engineering held at Casper, NY in July, 2013.

Dr. Zhang also attended the Gordon Research Conference on Chemical Reactions at Surfaces held at Les Diablerets, Switzerland in April, 2013. She presented a poster entitled “Imaging Reactions of Acetone with Oxygen Adatom on Partially Oxidized TiO$_2$(110)”.

Blake Birmingham (undergraduate student) presented a poster entitled “Dynamics of Electrochemically Etching Tungsten Tips & Effects on Scanning Tunneling Microscope Atomic Resolution” at 2013 URSA Scholars week. The poster was chosen as one of the URSA Scholars Week Outstanding Poster Presentations.

Publications:


**September 2013**

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