Texas Tech hosts 2012 Fall Meeting

website: *www.phys.ttu.edu/TSF12/*

The Joint 2012 Fall Meeting of the Texas Section APS, Texas Section of the AAPT, and Zone 13 of SPS will be held Thursday-Saturday, October 25-27, in Lubbock. The meeting is being organized by the Physics Department of Texas Tech University; the members of the organizing committee are Charles Myles (chair), Debra Boyce, Thomas Gibson, Juyang Huang, Luis Grave-de-Peralta, and Sungwon Lee.

Deadlines –-

- *Student travel award application:* **September 21 –** ***www.txstate.edu/physics/TSAPS***
- *Abstract submission:* **September 21 –** ***http://abstracts.aps.org***
- *Early registration:* **October 12 –** *www.phys.ttu.edu/TSF12/registration.html*

There will be sessions of APS, AAPT, and SPS, contributed papers on a wide variety of topics, and workshops organized by AAPT, as well as an outstanding collection of plenary talks about research at the frontiers of physics.

PLENARY TALKS at the Fall Meeting --

NASA Flight Director Ginger Kerrick (left image below) will speak at the Friday evening banquet, telling tales of her 7 years as NASA Flight Director. She has supported 13 International Space Station crews and 5 joint Space Shuttle missions. She is also an avid runner and an artist.

Black Holes to Dark Energy – *Dr. Karl Gebhardt* (UT-Austin), who has measured more black holes than anyone else in the world, will describe experiments with McDonald Observatory's new HETDEX telescope (image above right), which will be used to understand the expansion history of the universe.

Biological physics – Biophysics has become the fastest growing area of physics research, and it will be the subject of four plenary talks at the Lubbock meeting. *Dr. Michael Deem* (Rice University), who applies statistical physics methods to immunology and evolution, will explain how the immune system responds to vaccines in a talk titled "Physical Theory of the Immune System". *Dr. Jason Slinker* (UT-Dallas) will speak on "DNA in Nanoscale Bioelectronics", *Dr. Kelvin Cheng* (Trinity U and Texas Tech) will talk about "Protein Unfolding and Alzheimer's Disease", and *Dr. Roland Allen* (Texas A&M) will speak about "Theory and Experiment in Biomedical Science".

Physics Education is, appropriately, always a focus of the Joint Texas APS-AAPT-SPS meetings. At the meeting in Lubbock *Dr. Donna Stokes* (U Houston) will give a plenary talk entitled "Implementation of Math Pre-Testing and Tutorials for Improving Student Success", and *Dr. Beth Thacker* (Texas Tech) will give a plenary talk "Lessons from a Large-Scale Assessment Project at Texas Tech".

On Friday before the banquet *Dr. Michael Marder* (UT-Austin, Co-Director of UTeach) will lead a "*SPIN-UP*" discussion on actions that physics departments are taking to enhance undergraduate physics programs and increase the number of students majoring in physics.

Physics of Materials will be the subject of four plenary talks: *Dr. Kelly Nash* (UT-San Antonio), "Nanocomposite Materials"; *Dr. James Chelikowsky* (UT-Austin), "Answering Dirac's Challenge: Practical Quantum Mechanics for Materials"; *Dr. Alexander Demkov* (UT-Austin), "Integration of Functional Oxides with Semiconductors", and *Dr. Michael Marder* (UT-Austin), "Physics of Failure" (i.e., how things break).

Last but not least, *Dr. Martin Gundersen* of the University of Southern California will give a plenary talk entitled "Transient plasmas: Energy, Engines, and Other Applications of Nanosecond Pulsed Power".

HYER STUDENT RESEARCH AWARDS

At each fall meeting the TSAPS presents a *Robert S. Hyer Research Award* for excellence in research to an undergraduate student and to a graduate student. Each award consists of a plaque and a check for $500, and each student is invited to give a 20-minute talk. The award is presented to the students and their advisors.

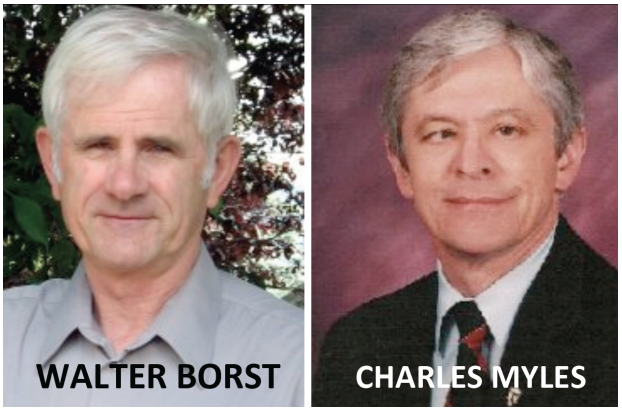
Landon Banister of Southern Methodist University will receive the 2012 Hyer Award for Undergraduate Research. Landon's research, conducted with his advisor Professor Stephen Sekula, addressed a major puzzle in physics: what are constituents of dark matter? Landon and his advisor analyzed data obtained at SLAC National Accelerator Laboratory to search for the decay of a B meson into a pair of "Dark Scalars".

Yanshi Huang of UT-Arlington will receive the 2012 Hyer Award for Graduate Research. Ms. Huang and her advisor, Professor Yue Deng, addressed the question "what was the cause of the surprisingly large difference in thermospheric density between the solar minima of 1996 and 2008? (The thermosphere extends about 80-700 km above the earth's surface.) The research indicated that the observed density difference could arise from a difference in the Joule heating by magnetospheric processes; this explanation differs from previous explanations.

DISTINGUISHED SERVICE AWARDS

Distinguished Service Awards were initiated in 2009 to recognize key persons who have contributed to the development of the Texas Section of the APS. The recipients of the 2012 Awards will be *Professors Charles W. Myles and Walter L. Borst*, both of Texas Tech University. Professors Myles and Borst will be presented the awards at the conference banquet on October 26, 2012. Professor Myles was a TSAPS Executive Committee Member-at-Large 1992-95 and 2005-06, Secrtetary-Treasurer 2006-11, and organizer of the fall meetings in 2003 and 2012. Professor Borst served in the TSAPS chair line 1989-92 and

was Secretary-Treasurer 1999-05. In 1989 he worked with Dr. Jerome Danberg at Shell Research to create the TSAPS Student Awards for Best Presentations (see following article).



STUDENT PRESENTATION AWARDS

At the meeting in Lubbock the oral and poster presentations by graduate and undergraduate students will be evaluated by a panel of judges organized by Professor Kelvin Cheng (Trinity U and Texas Tech), and cash awards of $150 each will be given for the best presentations.

TEXAS B.S. PHYSICS CONSORTIUM

The Texas Physics Consortium (TPC) is a collection of eight Texas undergraduate institutions that is working with the Texas Higher Education Coordinating Board Staff (THECB) to develop a new Joint B.S. Physics Degree program as a means of providing undergraduate physics education to their students while meeting the THECB minimum graduate threshold. The TPC institutions are Midwestern State, Prairie View A&M, Tarleton, Texas A&M-Commerce, Texas A&M-Corpus Christi, Texas A&M-Kingsville, Texas Southern, and West Texas.

The TPC institutions will share the delivery of upper-level physics classes to TPC students on a yearly rotation. Each institution will report its graduates under the Joint B.S. Physics Degree individually, but graduates across the consortium will be summed by the THECB to determine if the TPC meets the THECB's program graduate threshold. Based upon recent annual B.S. Physics degrees awarded by each individual institution, more than 20 Joint B.S. Physics Degrees should be awarded annually which will more than exceed the THECB proposed annual threshold of 8 graduates and make the Texas Physics Consortium one of the largest B.S. Physics producers in Texas. The TPC will also provide upper-level physics courses for students at Texas A&M-Central Texas pursuing a B.S. in Mathematics with Dual Secondary Teaching Certification in Math and Physics.

The Joint B.S. Physics Degree program will be the first joint degree program among undergraduate institutions in Texas. The program requires the coordination of three different University Systems. On May 31, 2012, the Presidents from all TPC institutions met in College Station to develop the administrative and reporting procedures for the consortium. The TPC institutions then developed a *Memorandum of Understanding* that details procedures for student enrollment, faculty evaluation, course assessment, money transfer, administrative oversight, and other items needed to operate the TPC. Each institution is now completing paper work for submission of the Joint B.S. Degree for approval by their institution's Board of Regents for final submission to the THECB in spring 2013.

While the TPC is not scheduled to begin official operation until fall 2013, already this fall Prairie View A&M has joined Tarleton, Texas A&M-Kingsville, and West Texas in sharing four upper-level physics courses, each of which has enrollment exceeding the State's threshold (e.g., enrollments in the junior level *Mechanics* and *Electromagnetism* courses each exceed 40 students).

(article by Professor Daniel Marble, Tarleton State)

TEXAS SPIN-UP WORKSHOP

An NSF-sponsored *SPIN-UP* workshop was held in Austin, May 4-6, 2012, to explore ways to increase the number of undergraduate physics majors and to respond to the Texas Higher Education Coordinating Board's pressure to increase the number of physics majors in order to use state resources more efficiently. THECB now requires bachelor degree programs to graduate at least 5 students/year (averaged over three years), and the board has announced plans to increase the required number of graduates to 8/year.

Workshop participant teams represented 18 Texas public 4-year colleges/universities, two Texas 2-year colleges, three private Texas colleges, and one out-of-state university. SPIN-UP Project Director Ruth Howes and the Principal Investigator of the NSF grant, Robert Hilborn (Associate Executive Officer AAPT), guided the planning of the program together with the local organizing committee (Michael Marder and Harry Swinney, UT-Austin; Heather Galloway, Texas State U; Carlos Handy, Texas Southern U; and Mario Diaz, UT-Brownsville).

At the workshop each team from the different departments developed an ***Action Plan*** to enhance its program for physics majors and to increase the number of physics majors. The proposed actions include:

- identify potential majors taking physics survey courses (e.g., students from engineering, math, geoscience)
- make research experience an important, even essential, part of the major
- nurture students by involving them in outreach and physics professional organizations
- offer a more flexible curriculum including specialization tracks such as health/medical physics, materials physics, geophysics, etc.
- establish an SPS chapter
- provide a commons area where physics majors can study and interact socially
- provide tutoring
- improve classroom instruction
- establish a consortium of small programs (see previous article on the *Texas Physics Consortium*)

(article by Harry Swinney, UT-Austin)

REPORT: SPRING 2012 JOINT MEETING AT ANGELO STATE UNIVERSITY

The Joint Spring Meeting of the Texas Section of the American Physical Society, Texas Section of the American Association of Physics Teachers, and Zone 13 of Society of Physics Students was hosted March 22-24, 2012, by the Department of Physics and Geosciences of Angelo State University. Over 275 people attended the meeting that featured 106 contributed papers, 38 posters, 9 AAPT workshops, and 7 invited speakers. The meeting began Thursday evening with registration, welcome session barbeque dinner, and a planetarium show.

At a Friday plenary session Dr. Cecile DeWitt-Morette (UT-Austin) spoke on *The Pursuit of Quantum Gravity* and Dr. Christina Torres (UT-Brownsville) on *Advanced LIGO: The Next Generation of Gravitational Wave Observatories*.

A session *Physics Careers and Pathways* featured invited speakers Dr. Gary White,

(Director of Society of Physics Students/Sigma Pi Sigma), Kendra Redmond (Society of Physics Students Program Director) and George James (NASA Johnson Space Center).

At the banquet Susan Cummins Miller (University of Arizona and author of *The Frankie McFarlane Mystery Series*) told a wonderful story, *A Funny Thing Happened on the Way to Pair-a-Dice: One Geologist's Curious Journey from Fieldwork into Fiction*.

The theme on Physics Careers and Pathways continued with talks by Dr. Robert Hilborn (Associate Executive Officer AAPT) on *Growing Undergraduate Physics Programs: What SPIN-UP Tells Us Works*, and by Crystal Bailey (Education and Careers Manager APS) on *Physics Careers: To the Bachelor's Degree and Beyond*.

(article contributed by Professor Andy Wallace, Angelo State)

TSAPS Executive Committee

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Rice University

Member-at-Large: Jennifer Steele (04/11 - 03/14)
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