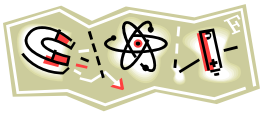

CURPA NEWS

Newsletter of the Council on Undergraduate Research Physics and Astronomy Division
Spring 2012

Message from the Chair

The 2012 CUR National Conference will be held June 23-26 at The College of New Jersey (TCNJ). The theme of the conference, "Leveraging uncertainty: Toward a new generation of undergraduate research" is particularly appropriate as budget pressures continue to mount on physics programs across the United States. Indeed, there is perhaps no more opportune time to attend a CUR conference than now.

The conference will bring together physics faculty from across the country in a personal setting focused solely on undergraduate research. It is a chance to share ideas, meet funding agency representatives, and attend workshops and presentations, all designed to help the enterprise of undergraduate physics research thrive. The conference also presents an opportunity to meet the new CUR executive officer, Elizabeth Ambos, as well as interact with your Physics and Astronomy Division councilors. Note that there will be a P&A division open house at the meeting, which will be a great opportunity for you to let us know how the division can better support your work as undergraduate research mentors. There will also be discussion at the conference about proposed governance changes within CUR and your input will be needed.

Finally, as a member of the TCNJ physics department, I am delighted by the opportunity to open the doors to our department and campus to the CUR membership. The TCNJ physics department has a thriving undergraduate research program and you are invited to tour our facilities and meet our students and faculty during the departmental open house that will be scheduled during the conference. If you have questions, comments, or feedback about the conference, don't hesitate to contact me.

On behalf of the CUR Physics and Astronomy division councilors, I look forward to seeing you in June!

A correction: in the Winter newsletter, I mistakenly identified Beth Cunningham as "former CUR councilor". Quite the opposite: Beth is very much a councilor in addition to being the executive director of AAPT. Sorry Beth!

Dave McGee
The College of New Jersey
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What will happen to Small Physics Departments?

That was one question recently explored at the 2012 American Institute of Physics Assembly of Society Officers on Thursday, March 22nd. Twenty-one AIP Member, Affiliated, and guest societies, along with AIP Governing Board, AIP staff, and speakers from academic institutions and government agencies were present to discuss this issue. From AIP Matters (www.aip.org/aip/aipmatters/archive/2012/3_26_12.html):

> "Will small undergraduate STEM programs go extinct?" Bob Hilborn, associate executive officer of AAPT, meant to grab attention with this session title. Yet the possibility it posits should be taken seriously. Texas, Louisiana, and Missouri are among those states that have instituted bachelor's degree quotas, which many small science departments are

having trouble filling. As a result, departments are losing their degree-granting status. Lee Sawyer of Louisiana Tech explains that several threatened departments in his state have been successful at consolidating programs with related disciplines. When departments morph into simple "service departments"—offering courses to support other majors—programs tend to deteriorate rapidly; faculty become disenfranchised and academic rigor languishes. Ramifications are compounded when looking at the impact this trend has on underrepresented minority students. Roman Czujko, Director of the AIP Statistical Research Center, reports that more than half of the African American physics bachelor's received their degrees from historically black colleges and universities (HBCUs)—and HBCUs are among the hardest hit in those states that are using degree metrics to reduce degree granting programs. Michael Marder of the University of Texas at Austin shared that the Texas Board of Higher Education is concerned that the retention rate among physics enrollees is very poor. We must do something that dramatically changes the way we treat students, placing more emphasis on their needs so that they can succeed.

So the question that was posed to the group was: What can scientific societies do that will make a difference? The answer: When there is a good case for support, societies can play an important role, bringing national attention to a local issue. AAPT and APS have been especially active in galvanizing support from the physics community. SPIN-UP (Strategic Programs for Innovations in Undergraduate Physics) has helped many schools improve/save their programs. Moreover, the physics community is vocal! In some instances the groundswell of support/protest in the face of potential quota implementations has been enough to reverse the strategy of certain institutions—and certain state education boards as well.

The speakers' slide presentations are available on the Assembly website, along with the notes from the breakout groups: www.aip.org/aip/assembly/march12/.

Some additional comments and thoughts: Physics is not the only discipline that is under threat. Geosciences, chemistry, and mathematics departments often have smaller number of majors. Texas has closed or placed on probation some of these departments. Eliminating Physics departments (as well as other STEM programs) reduces opportunities for rural students and underrepresented minorities. It has a disproportionate impact on future K-12 teachers. There are also additional unintended consequences. The quality of instruction is affected, fewer research-active and qualified faculty will be recruited and retained, fewer students will have access to undergraduate research, and there will be fewer students in the STEM pipeline. The message that closing Physics and other STEM departments sends is that STEM education is not really important after all.

What can be done? As stated above, professional societies can play a major role in assisting small departments. AAPT (and CURPA) has provided several letters of support for departments under threat adding to the grass roots effort to save effective physics departments. Letter writing campaigns places local conditions in the national context. AAPT has been instrumental in developing characteristics of thriving physics departments (see SPIN UP report: www.aapt.org/Programs/projects/spinup/upload/SPIN-UP-Final-Report.pdf). AAPT, AIP, and APS have been providing

workshops based on the SPIN UP report for physics departments interested in improving their undergraduate programs. AAPT also has developed guidelines for departments undergoing self-studies, also based on the SPIN UP report (see aapt.org/Resources/ugguidelines.cfm). Professional societies can continue to monitor state and local conditions and alert the community when closures are likely to occur. Finally, providing forums like the AIP Assembly of Society Officers and the CURPA Councilors Meeting to discuss and develop action plans is key to remaining vigilant on this topic. The future of physics – and STEM – relies on a wide variety and large number of thriving Physics departments.

Beth Cunningham
Executive Director, AAPT

(Image credit Zac Williams, Weber State Univ.)

NCUR Showcases Undergraduate Physics and Astronomy Researchers

The 2012 National Conference on Undergraduate Research (NCUR), hosted by Weber State University March 29-31 in Ogden, UT, was a resounding success for undergraduate researchers in physics and astronomy. Students presented over 100 oral and poster presentations on topics ranging from ethanol masers in star forming regions to bacteria-controlled magnetic nanowire arrays. The students, along with more than 3000 other participants from 60 colleges and universities across the full spectrum of disciplines enjoyed three days of talks, plenary sessions, and poster sessions. The conference also hosted social outings to "notorious" 25th Street in Ogden as well as skiing excursions and hikes at nearby Antelope Island. The conference, one of the largest ever booked in the area, filled local hotel rooms over a 40 mile stretch of the Wasatch Front surrounding Ogden.

The 2013 NCUR event will be held at the University of Wisconsin La Crosse on April 11-13, 2013. The Physics and Astronomy Division is encouraged to build on the growing success of the NCUR-CUR partnership by encouraging your students to attend the event. Encourage your colleagues to consider sending students as well! With luck, 2013 will showcase even more exemplary undergraduate physics and astronomy research.

John Armstrong
Weber State University

Kudos To:

All the physics and astronomy students who presented at NCUR. With 104 physics and astronomy presentations at NCUR, space does not allow us to name everyone individually. But congratulations from CURPA on your accomplishments!

Mark Biermann, Taylor University. Mark will become the Vice President for Academic Affairs and Dean of the Faculty at Wartburg College, Waverly, IA, effective June 18.

Margaret Landis, ***Northern Arizona University***. Margaret presented "Analysis of impact craters in the 0-20°N 0-30°E region of Arabia Terra, Mars, and implications for volatiles" at the 43rd Lunar and Planetary Science Conference in March. (Mentor: Nadine Barlow)

Contribute to our Kudos Section! Send information about achievements, recognitions, new grants, promotions, moves, etc. for undergraduate physics and astronomy students and CURPA faculty to editor Nadine Barlow.

2012 Posters on the Hill

Congratulations to the following physics and astronomy students who presented their research at the 2012 Posters on the Hill. The event was held April 23-24 in the Rayburn House Office Building in Washington, DC.

- Aaron Bell, Western Kentucky Univ: Dust infrared emission in an H2-forming Perseus-arm cloud (Mentor: Steven Gibson).
- Timothy Horton, Xavier Univ: Creating and controlling an array of magnetic nanowires using magnetotactic bacteria (Mentors: Heidrun Schmitzer and Steven Herbert).
- Kurt Iversen, National Institute of Standards and Technology: Spin valves and magnetic tunnel junctions (Mentor: Shannon Mayer).
- Judson Locke, FL Institute of Technology: Nuclear terrorism prevention with particle physics technology (Mentor: Marcus Hohlmann).
- Michael Schaffner, Univ. AZ: Water on the Moon: Remote sensing from the Lunar Reconnaissance Orbiter (Mentor: William Boynton).
- D'Artagnon Womack and Andrew Nichols, Central Washington Univ: The first laser action observed from optically pumped O-17 methanol (Mentors: Michael Jackson and Tom Fleming).

CURPA Communications:

In addition to our quarterly newsletter, the CUR Physics and Astronomy Division has a blog (cur-ph.blogspot.com/), a Facebook group, and a LinkedIn group. We welcome your input!

Your CURPA Councilors:

VJ Agarwal, Minnesota State University Mankato.
John Armstrong, Weber State University. CUR Nominations Committee.
Nadine Barlow, Northern Arizona University. CURPA News Editor.
Mark Biermann, Taylor University.
Horace Crogman, La Sierra University.
Beth Cunningham, AAPT.
Chris Hughes, James Madison University.
Michael Jackson, Central Washington University. Co-Chair CUR Fellows Review Task Force.
Bryan Luther, Concordia College Moorhead.
John Mateja, Murray State University. Co-chair CUR Posters on the Hill Review Task Force, NCUR Oversight Committee, and Co-Chair CUR Program Review Committee.
Duncan McBride, National Science Foundation. CUR Treasurer and CUR Investments Committee.
David McGee, The College of New Jersey. CURPA Chair.
Terry Oswalt, Florida Institute of Technology.
David Schaefer, Towson University.
Alex Small, California State Polytechnic University Pomona.
Allyn Smith, Austin Peay State University.
Gubbi Sudhakaran, University of Wisconsin La Crosse.
Richard Thompson, The College of Saint Rose.
Hank Yochum, Sweet Briar College. CURPA Secretary and CUR Quarterly Editors Board.
Jie Zou, Eastern Illinois University.

CURPA News Deadline

CURPA News comes out quarterly and we welcome your contributions! Please send your submissions, comments, achievements, etc. to editor Nadine Barlow at Nadine.Barlow@nau.edu. Deadline for the Summer 2012 issue is ***July 15, 2012***.