



CURPA NEWS



Newsletter of the Council on Undergraduate Research Physics and Astronomy Division

Fall 2015

Message from the Chair

Welcome to the fall edition of the Physics and Astronomy (P&A) division newsletter. I would like to thank Rick Thompson for taking over as our division's newsletter editor. If you have something to submit to our winter newsletter, please contact Rick at thompsor@mail.strose.edu. We are always looking for contributions from within the division, including articles, job announcements, promotions, and awards.

As an organization, there are a number of events we can look forward to this year. The National Conference on Undergraduate Research (NCUR) will be hosted by the University of North Carolina at Asheville where the conference was first held 30 years ago! Both NCUR and Posters on the Hill will take place in April 2016 and are great programs for your students to apply to and hopefully participate in. For faculty and administrators, this year the CUR biennial Conference will be held at the University of South Florida in June 2016. The theme for the conference is *Advancing Undergraduate Research: Collaboration and Innovation in a Global Society*.

Upon reflection, CUR has had a significant influence on many of the activities that have helped shape my career. Initially, it assisted in my growth as a researcher and mentor to undergraduates. Today, in my new role as academic dean, I have been able to draw upon CUR's collective expertise to begin assisting and supporting the next generation of faculty mentors in their efforts of engaging undergraduates in meaningful,

collaborative research activities. Some of these resources include:

- Discussing best practices in mentoring and in promoting Undergraduate Research as a high-impact practice. A recent compilation of best practices, *Characteristics of Excellence in Undergraduate Research (COEUR)*, can be found at http://www.cur.org/publications/publication_listings/COEUR/.
- Access to professional development opportunities for my administrative and faculty colleagues. These include well recognized institutes and publications such as *The CUR Quarterly* and CUR's "How To" handbooks.
- Access to outstanding and experienced program review teams.
- Access to formal and informal mentoring within the P&A division.
- Access to conferences such as the NCUR, Posters on the Hill, and the CUR biennial national conference.
- P&A travel awards to NCUR.
- Recognition of undergraduate research activities through the CUR Fellows awards.
- Advocacy.

Through the development of the Strategic Pillars

(http://www.cur.org/about_cur/strategicpillars/), councilors have been able to focus on areas deemed important to the mission of the organization. Several task forces have been created to address these areas. For example, one task force is examining the outcomes of

undergraduate research that includes compiling all known studies associated with assessing its impact. As the leading advocate and voice for undergraduate research, having the resources available to the membership will assist our efforts in communicating the importance of this high-impact practice.

Finally, as a member, please take advantage of all CUR has to offer. Please also consider informing and encouraging your colleagues to join with particular emphasis on your junior faculty colleagues. The cost to join CUR is modest while the cost is zero if your institution is an enhanced member (http://www.cur.org/membership/list_of_institutional_members/). As autumn approaches, I wish you the best of luck in your upcoming activities. Please feel free to contact me if you have questions or suggestions.

Michael Jackson
Millersville University
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JUNE 2015 BUSINESS MEETING REPORT

The CUR Physics and Astronomy (CURPA) Division Councilors met three times during the CUR Business Meeting, held June 25-27, 2015 on the University of Oklahoma campus in Norman, OK. Much of the discussion focused on ways to raise the profile of CUR and CURPA and how to better engage the CURPA membership.

Connections with Professional Organizations: CURPA has had a presence at several small conferences the past few years, but we realize we can do more. The Council decided to create a Division poster for presentation at other meetings, such as the American Physical Society (APS) and

American Astronomical Society (AAS). We also could conduct pre-conference workshops on undergraduate research best practices and benefits. We discussed various ways in which we can partner more closely with the American Association of Physics Teachers (AAPT) as well as investigating a possible joint membership program with the Society of Physics Students (SPS). We also will reach out to the National Postdoctoral Association to encourage more postdocs to participate in CUR.

Community Colleges: The Division discussed ideas for how we can make better connections with community college faculty as well as how to encourage them to serve on the Council so they have a stronger voice within CUR. We talked about various ways in which CUR could provide assistance to community college mentors, such as providing help with the application process for nominating students for the Goldwater award.

Membership: The Division already provides a number of benefits to the CURPA membership, including providing suggestions of potential program reviewers, distributing CUR information via the Division newsletter, engaging the membership as reviewers for events such as Posters on the Hill, providing travel awards for students to attend NCUR, and running the CUR Physics and Astronomy REU program. New ideas that were discussed include developing an assessment review team for grant proposals, instituting an awards program for mentors and/or undergraduate researchers, and establishing a mentoring program for new faculty and postdocs who are just starting to get involved in mentoring undergraduate researchers. In addition, the CURPA Division's Facebook group has been converted into a Facebook page.

Division Vice Chair: CUR Divisions can now have a Vice Chair, although CUR has left it to the Divisions to decide how they want to implement this position. The Division decided to have a Chair-elect serve as Vice Chair the year before s/he assumes the Chair's position. The outgoing chair will serve in the Vice Chair capacity for a year following the end of their term. This will improve the transition between incoming and outgoing chairs. Mike Jackson will step down as Division chair next year. Mohammad (Sami) Samiullah was elected as Vice Chair/Chair-elect for this year.

Nadine Barlow, CURPA Secretary
Northern Arizona University



Summer ABM 2015

Back row: John Armstrong, Nadine Barlow, Terry Oswalt. Middle row: Rick Thompson, Beth Cunningham. Front row: Brian Utter, John Mateja, Mike Jackson, Toni Sauncy, Chris Hughes, Mohammad "Sami" Samiullah, Duncan McBride. Not pictured: Maria Bautista

CUR-Goldwater Scholars Faculty Mentor Award

CUR and the Goldwater Foundation are pleased to announce the 2016 CUR-Goldwater Scholars Faculty Mentor Award. Faculty members in STEM disciplines who have five or more years of teaching and

research experience past the terminal degree and have mentored 3 or more Goldwater scholars may be nominated by their president or provost for the award. In addition to the nomination letter, the initial nomination packet includes a three-page CV of the nominee and a list of all Goldwater Scholars mentored by the nominee that includes each student's name, year of the Goldwater scholarship and an indication of whether the nominee was the (1) sole research mentor, (2) joint mentor or (3) supported the student in preparing his/her Goldwater application only. The nomination deadline is November 2, 2015. Nominations should be mailed or emailed to:

CUR-GS Faculty Mentor Award
ATTN: Dr. Elizabeth L. Ambos
Council on Undergraduate Research
734 15th St. NW
Suite 550
Washington, DC 20005

E-mail: eambos@cur.org (with a copy to jeffrey@cur.org)

Complete information regarding the CUR-GS Faculty Mentor Award and the application process can be found at http://www.cur.org/projects_and_services/goldwater_scholars_faculty_mentor_award/

John Mateja
Chair, CUR-Goldwater Scholars Faculty Mentor Award Committee

Councilor Nomination Deadline

The nomination deadline for CUR Councilors to serve on the Physics and Astronomy Division will be announced by the National Office shortly (it is typically done at the beginning of November). All current CUR members (including new members at the time of nomination) are

eligible and encouraged to apply. Remember, membership is free if your institution is an enhanced member of CUR—all a person has to do is fill out the membership application. Please contact any colleagues you feel would make good candidates for a CUR Council position. You can learn more about the CUR P&A Division at:

http://www.cur.org/governance/divisions/physics_astronomy/

Please contact Raul Peters for more information or if you are interested in being nominated.

Raul Peters
Paine College
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NCUR 2016

In honor of its 30th anniversary, the 2016 National Conference on Undergraduate Research (NCUR) will be held at its inaugural location, the University of North Carolina at Asheville, from April 7-9, 2016. This is a major venue for undergraduate students to present their research and consists of a variety of plenary speakers as well as oral and poster presentations, visual arts displays, and performances. Abstracts will be accepted from October 5 through December 2, 2015. For more information about NCUR, including a draft schedule of the conference and links to the application, please go to:

http://www.cur.org/ncur_2016/.

2016 NCUR Travel Award:

The CUR Physics and Astronomy division is pleased to offer several travel awards for students attending the National Conference on Undergraduate Research (NCUR) at the University of North Carolina at Asheville, from April 7-9, 2016. Applying for the travel award is easy!

When your abstract is accepted by NCUR, send a single email to Michael Jackson (mjackson@millersville.edu) with the following:

1. Your name and contact information
2. Your student's name and contact information
3. Your NCUR acceptance letter

Awards will be made on a first-come first-serve basis. The first several applicants will have their student registration fee paid by the CUR Physics and Astronomy Division. Notification of abstract acceptance will occur around January 11, 2016.

Please note:

- *One award will be made per department*
- *Awards are limited to physics and astronomy submissions. Separate physics and astronomy departments from the same campus will be considered as distinct, and are each eligible.*
- *Priority is given to students of CUR P&A members.*
- *CUR P&A councilors may apply, but will receive an award only if funds are available after they have been distributed to the general P&A membership.*

Michael Jackson
Millersville University
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2016 Posters on the Hill

Do you have an engaging, personable research student who can explain his/her research to a non-technical, educated audience? If so, your student might be a great advocate for undergraduate research in Washington, DC, and should consider applying to the 2016 Posters on the Hill. This program is aimed at connecting undergraduates with their congressional representatives. Nothing more effectively demonstrates the value of undergraduate research than the words and stories of the student participants themselves.

Last year's recipients were:

- Haroon Khan, California State University Fullerton, (Advisor: Dr. Geoffrey Lovelace), "Simulating Colliding Black Holes for Gravitational Wave Astronomy,"
- Christopher Christopherson, University of Wisconsin-Oshkosh, (Advisor: Dr. Nadia Kaltcheva), "Observing Nebulosities: the Cygnus Superbubble," and
- Talia Hettie Martin, Bridgewater State University, (Advisor: Dr. Ed Deveney), "Construction of a Laser Frequency Stabilization System for a Magneto Optical Trap."

Additionally, the following students from the Physics and Astronomy Division received an honorable mention:

- Caitlin Hansen and Alexis Ernst, Southern Connecticut State University, (Advisor: Dr. Todd Schwendemann), "Characterization of Bulk Metallic Glasses (BMGs) using Various Microscopy Techniques for Biomedical Applications."

CUR has started accepting applications for the 2016 Posters on the Hill event. The

submission deadline is Wednesday, November 4, 2015 (the portal closes at 11:59 pm EST). Selected participants will be notified in late January/early February 2016. Interested in learning more? Please visit the CUR website at:

http://www.cur.org/conferences_and_events/student_events/posters_on_the_hill/

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CUR P&A REU Program

This past summer, councilors and members of the Physics and Astronomy Division hosted the second year of their pilot REU program funded by the National Science Foundation. This program seeks to provide students early in their academic education with a faculty mentored research experience with an emphasis on recruiting students from community colleges and universities where access to research for undergraduates is limited.



End of the summer field trip to the channeled scablands in central Washington. From left to right: Riley, Marc, Marija, Becca, Chris, Tegan, and Erin. Other field trips included a visit to LIGO and the Wild Horse Wind and Solar Energy facility.

Seven undergraduates participated in this REU program with additional support provided by CUR. This year, the profiles of these students will appear in each of the newsletters, three of which appear in this edition.

Marc Amaral, Cape Cod Community College and Riley Jordan, Whitman College

Their project “The search for Pulsations in White Dwarf and Subdwarf B stars.” was performed at Embry-Riddle Aeronautical University with Dr. Terry Oswalt and Dr. Saurav Dhital. This included a week of observing performed at Kitt Peak National Observatory. A veteran of the United States Marine Corps, Marc is currently pursuing his associate degree from Cape Cod Community College and upon graduation plans to transfer to the University of Massachusetts Amherst for the start of the spring 2016 semester to major in astronomy. Riley is a rising junior and is pursuing her physics and astronomy degree at Whitman College in Washington.

Tegan Marianchuk, Arizona State University

Tegan’s project, “The effect of defects on microtubule persistence length” was performed at the University of Wisconsin-La Crosse with Dr. Tav Hawkins and Dr. G. R. Sudhakaran. Tegan is a rising sophomore working on her degree in biophysics.

This was the final year of the pilot program. We have requested funding for another REU cycle and will update you on its status this winter.

Michael Jackson
Millersville University

John Mateja
Murray State University

Opportunities

(If you have a job opening or program that you would like to advertise here, please send the information to us for inclusion in the next newsletter)

Two Tenure-Track Assistant Professor Openings in Astronomy and Planetary Science

The Department of Physics and Astronomy at Northern Arizona University is seeking excellent candidates for two tenure-track positions in astronomy and/or planetary science at the Assistant Professor level beginning in August, 2016 to help launch its new Ph.D. program (nau.edu/AstroPhD). The minimum qualification is an earned doctorate in astronomy, planetary science, or a related field. Preferred qualifications include demonstrated interest or ability to develop a research program that involves undergraduate and graduate students; a demonstrated record of publications and/or extramural funding in astronomy and/or planetary science; evidence of high quality teaching and commitment to student success at the graduate and undergraduate levels; expertise in exoplanets, astroinformatics, astrochemistry, astronomical instrumentation, and/or observational astronomy specializing in Solar System objects, exoplanets, or related topics; and the ability to work with students, colleagues, and community members from diverse cultures. Faculty at NAU have full competitive access to all University of Arizona Observatory facilities (LBT, MMT, Magellan, etc.); and NAU is a partner in the Lowell Observatory Discovery Channel Telescope.

Applicants must include a CV, a statement describing teaching experience and philosophy, a statement describing research interests, an unofficial copy of their graduate transcript, and the names and contact information of three references. Save all

items, in the order stated, as a single PDF and apply through

<http://www.nau.edu/Human-Resources/Careers/Faculty-and-Administrator-Openings/>,

select the link “Faculty and Administrator Job Openings,” select Assistant Professor (vacancy number 602152), and then select “Apply” on that page. Attach your single PDF with these items to your application through the NAU HR site. Only complete application packets submitted through NAU HR will be reviewed. Address questions to Astro.Jobs@nau.edu or (928) 523-2661.

The search will remain open until the position is filled or closed; however, the screening committee will begin reviewing applications on October 12, 2015. NAU is an AA/EO/MWDV Employer.

New PhD Program in Astronomy and Planetary Science. The Department of Physics and Astronomy at Northern Arizona University is pleased to announce its new PhD program in Astronomy and Planetary Science, beginning in Fall 2016. Program emphases include exoplanet science, astrochemistry, solar system formation and evolution, astroinformatics, and use of telescopes to study solar system objects and exoplanets. Students will be able to work with astronomers and planetary scientists at Northern Arizona University, Lowell Observatory, the US Geological Survey Astrogeology Science Center, and the US Naval Observatory, all based in Flagstaff, AZ. All students in the program will receive full-tuition waivers, a stipend as either a graduate teaching assistant or a graduate research assistant, and health insurance. Generally, students will be supported as teaching assistants in introductory physics and/or astronomy labs during their first two years and then as research assistants after advancing to PhD candidacy. Successful

applicants will usually have a bachelor's or Master's degree in Physics, Astronomy, Chemistry, or a related field with a 3.0 GPA or above. Evaluation of applications for Fall 2016 admission will begin after January 15, 2016. Financial aid awards in the form of Graduate Teaching Assistantships will be selected in April. For more information, see www.physics.nau.edu/AstroPhD.shtml.

Your CURPA Councilors

John Armstrong, Weber State University. Integrating Research into the Curriculum Task Force and CURPA Webmaster.

Nadine Barlow, Northern Arizona University. CURPA Secretary and Chair CUR Fellows Committee.

Maria Bautista, Kapi`olani Community College. Diversity and Inclusion Task Force.

Matthew Beaky, Juanita College. CUR Finance Committee.

Mark Biermann, Valparaiso University. Constitution and ByLaws Committee.

Horace Crogman, University of California Merced.

Beth Cunningham, AAPT. CURPA Mentoring program.

Michael Jackson, Millersville University. CURPA Chair, CUR Posters on the Hill Committee, Innovation and Collaboration Task Force, and CUR Executive Board.

George Marcus, SUNY Geneseo

John Mateja, Murray State University. CUR/Barry Goldwater Scholar Faculty Mentor Award Committee and NCUR Oversight Committee.

Duncan McBride, formerly at the National Science Foundation. CUR Treasurer, CUR Finance Committee, and CUR Investments Committee.

David McGee, The College of New Jersey. Internationalization and Undergraduate Research Task Force.

Sorinel Oprisan, College of Charleston. CUR Quarterly Editors Board.

Terry Oswalt, Embry-Riddle Aeronautical University Daytona Beach. Advocacy Advisory Committee.

Raul Peters, Paine College. Nominations Committee.

Doug Petkie, Wright State University.

Phillip Reed, Kutztown University.

Mohammad Samiullah, Truman State University. CURPA Chair-Elect and Internationalization and Undergraduate Research Task Force.

Toni Sauncy, Texas Lutheran University.

Allyn Smith, Austin Peay State University. CUR Posters on the Hill Review Committee.

Gubbi Sudhakaran, University of Wisconsin La Crosse. Program Review.

Brian Utter, James Madison University.

Richard Thompson, The College of Saint Rose. Integrating Research into the Curriculum Task Force and CURPA Newsletter Editor.

CURPA News Deadline

CURPA News comes out three times per year and we welcome your contributions! Please send your submissions, comments, achievements, opportunities, etc. to editor Rick Thompson (thompsor@strose.edu). Deadline for the Winter 2016 issue is ***January 8, 2016***.