



CURPA NEWS



Newsletter of the Council on Undergraduate Research Physics and Astronomy Division

Fall 2016

Message from the Chair

The following is a blast from the past – a Chair’s Message from 2012 that we thought was worth repeating!

Is physics and astronomy education important to you? Seems like a silly question. However, we are all being asked to quantify what it is we do for a living and why it is valuable. At the same time, we are seeing the rise of for-profit educational enterprises along with a boom in online classes. Even virtual laboratory classes are showing up. In this climate, it is more important than ever to educate our colleagues, administrators, and fellow taxpayers that one-on-one faculty mentored research with students is essential for the preparation of the next generation of STEM professionals and educators. It cannot be done solely online any more than surgery can be learned solely online.

In short, there is no way to replace the apprenticeship model of actually doing physics with a faculty mentor. *This is what we do, and if we don’t, where will the next generation of STEM leaders come from?* We all have a stake in this, from 2-year community colleges to R-1 institutions. One immediate action you can take is to become an active member of CUR. As the voice of undergraduate research, CUR can help you build a robust and thriving department through the following:

- **Access to recognized institutes, programs, and publications** - These promote best practices in undergraduate research, from starting a research program to dealing with administrative issues.

- **Access to outstanding program review teams** - An extensive network of experienced CUR members is available for external review of physics and astronomy programs, as well as larger multi-departmental units. If you are looking to promote, recognize, or initiate undergraduate research in your department, a CUR review team has the broad external experience to open a dialogue with faculty and administrators.
- **The CUR Quarterly** - This is a peer-reviewed journal about all things undergraduate research. Have a question about the appropriate teaching load when supervising undergraduate research students? Want to see examples of institutional summer research programs? Want to start a sponsored programs office? These and many other questions are all answered in the Quarterly. The Quarterly is an invaluable resource for any number of departmental tasks, from conducting a faculty search to writing a strategic plan.
- **Professional resources** - Would you like external letters of reference from professionals that recognize the value and challenges of undergraduate research? Are you searching for a new position, or searching for a new faculty member? CUR can help you in all of these by connecting you with professionals with many years of experience from a broad range of institutions.
- **Funding** - Become a CUR P&A councilor and be eligible to participate in NSF-REU proposals to fund summer research students at your institution.

- **Travel awards** - The CUR Physics and Astronomy division will be offering travel awards for students to attend the National Conference on Undergraduate Research at the University of Memphis in April 2017.
- **Advocacy** - CUR is the organization that advocates for undergraduate research funding. This funding is for faculty and students. Programs such as NSF-RUI are the direct result of CUR advocacy. As a member of CUR, your voice will be heard in Washington as part of our ongoing dialogue with funding agencies.

The cost to join CUR is minimal, and if your institution is an enhanced member, the cost is zero. So, if you are already a member, please take advantage of all CUR has to offer. Indeed, walk down the corridor and encourage your colleagues to join. If you are a department chair, likewise ask your colleagues to join, with particular emphasis on your junior faculty. If you are not a member, ask yourself: is physics and astronomy education important for the next generation of STEM professionals and educators? If the answer is yes, please join us!

Dave McGee
The College of New Jersey
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JUNE 2016 BUSINESS MEETING REPORT

CUR held its annual Business Meeting at the University of South Florida in Tampa on June 23-25, 2016, just prior to the CUR Biennial Conference. Your CURPA Councilors met three times during the Business Meeting to discuss Division issues. Major results of those discussions include the following:

Terry Oswalt (Embry-Riddle Aeronautical University) was elected chair of the Physics and Astronomy Division.

Your Councilors discussed how students often receive awards at professional conferences for their work but their mentors are seldom recognized for the role that they play in the student's success. CURPA's goal will be to provide letters and certificates to deliver tangible recognition of the undergraduate research that faculty mentors have enabled for those students who receive awards from professional societies at selected venues.

CURPA receives some funding from CUR each year for Division activities. The Councilors discussed how to allocate the funds for the upcoming year. We decided on the following: recognition of faculty mentors (see previous item), travel grants for students presenting at NCUR, and a free year's membership to CUR for physics and astronomy faculty mentoring Goldwater recipients and students receiving recognition for their research from SPS at meetings. If any funds remain unused, the Division will put out a call in the winter newsletter for proposals to support undergraduate students on summer research projects.

Your Councilors also spent some time discussing ways to increase CURPA membership. In addition to promoting the benefits of CUR to potential members, we also will enhance our connections with other professional societies such as SPS, APS, AAS, AAPT, and SACNAS. We will reach out to enhanced institutional members through emails to the department chairs and through workshops and/or webinars to individual faculty. CURPA members can help at their local institutions by talking to their colleagues about CUR and by offering to provide a short introduction about CUR at

new faculty orientations. We also discussed the possibility of sponsoring a panel discussion at a discipline-specific meeting where students can discuss the value of undergraduate research in order to bring more recognition to CUR.

The upcoming CURPA Newsletters will provide additional details of these activities and opportunities, so stay tuned!!

*Nadine G. Barlow
CURPA Secretary
Northern Arizona University
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Summer ABM 2016

Back row: Francis Tuluri, Sorinel Oprisan, Maria Bautista, Terry Oswalt, Gabriel Williams, Allyn Smith, Nadine Barlow, George Marcus, Toni Sauncy, Doug Petkie, John Mateja, Matt Beaky, John Armstrong, Front row: Duncan McBride, Matt Biermann, Mike Jackson, Phill Reed.

CUR-Goldwater Scholars Faculty Mentor Award

CUR and the Goldwater Foundation are pleased to announce the 2017 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 7, 2016. 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
johnmateja2@gmail.com*

Goldwater Undergraduate Scholarships

Undergraduates who expect to pursue a research career in the natural sciences, mathematics and engineering should be considered for nomination for a Goldwater Scholarship, an award that is considered to be among the most prestigious an undergraduate may receive. Sophomores who are nominated and selected for the award receive up to \$7,500 in each of their junior and senior years. Juniors who are

nominated and selected for the scholarship receive up to \$7,500 in their senior year.

A full set of guidelines for the 2017 competition will become available on the Barry Goldwater Scholarship and Excellence in Education Foundation's web site in early September, 2016 (<https://goldwater.scholarsapply.org/>).

While not required, early involvement in research as an undergraduate is highly desirable. The nomination period closes on the last Friday in January, 2017, at 5 p.m. (CST). Questions concerning the scholarship or nomination process should be directed to Dr. John Mateja, President, Goldwater Foundation at goldwaterpres@vacoxmail.com or to Lucy Decher, Executive Administrator, at goldh2o@vacoxmail.com.

John Mateja
Chair, CUR-Goldwater Scholars Faculty Mentor
Award Committee
johnmateja2@gmail.com

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 John Armstrong for more information or if you are interested in being nominated.

John Armstrong
Weber State University
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NCUR 2017

The 2017 National Conference on Undergraduate Research (NCUR) will be held at the University of Memphis, from April 6-8, 2017. 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 3 through December 2, 2016. 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_2017/.

2017 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 Memphis, from April 6-8, 2017. Applying for the travel award is easy!

When your abstract is accepted by NCUR, send a single email to Terry Oswalt (oswaltt1@erau.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 23, 2017.

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.*

Terry Oswalt
Embry-Riddle Aeronautical University
oswaltt1@erau.edu

2017 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 2017 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:

- Derek Bradley, University of Northern Iowa, (Advisor: Dr. Tim Kidd), "Development of Ultralight Magnets,"
- Daniel Krolikowski, State University of New York-Geneseo, (Advisor: Dr. Aaron Steinhauer), "WIYN Open Cluster Study: Lithium in Red Giants of the Open Cluster NGC 2158," and
- Meghan Stuart, University of Tennessee at Knoxville, (Advisor: Dr. Christine Natrass), "Background

Subtraction Methods for Precision Measurements of Di-Hadron and Jet-Hadron Correlations in Heavy Ion Collisions."

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

- William Zimmerman, Towson University, (Advisor: Dr. Vera Smolyaninova), "Metamaterial Superconductors,"
- Theodore Jimson and Michael Smith, Central Washington University, (Advisor: Dr. Darci Snowden), "Modeling Energetic O+ Ions Interacting with Titan's Atmosphere."

CUR has started accepting applications for the 2017 Posters on the Hill event. The submission deadline is Friday, November 4, 2016. Selected participants will be notified in late January/early February 2017. Interested in learning more? Please visit the CUR website at:

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

Michael Jackson
Millersville University
mjackson@millersville.edu

New Councilor Profiles

As a new feature this year we are including in the newsletter profiles of our newest councilors. First up is Francis Tuluri.

Dr. Francis Tuluri, Professor, Department of Technology, Jackson State University has a long standing teaching and research experience for over thirty years including services overseas. He has taught several courses encompassing multiple disciplines of science and engineering at the

undergraduate and graduate level. His areas of research include Materials Science, Energy, Computer Modeling Simulations, GIS Air Quality Analysis, Physics Education, and Science and Technology Education. In the past five years, he has received several grants funded by National and Corporate agencies. In particular, he has received funding by the Army Education Outreach Program to broaden participation of K-12 students to pursue STEM disciplines. At Jackson State University, he has received Center for Undergraduate Research Award, and Creative Award. He has been named “Outstanding Professor, College of Science, Engineering and Technology, JSU,” 2013.

Francis is keenly interested in integrating undergraduate curriculum with research with a view to develop research skills to the students. Undergraduate research is an integral part of imparting learning through investigation and analysis. Some of the areas of undergraduate research that his students are trained with are Computer Modeling Simulations, GIS and Air Quality analysis, Liquid Crystals Materials Science, Energy Fuel cells, and STEM Education.

The students are encouraged to take advantage of gaining research skills in order to broaden participation in STEM areas, and to retain to graduation. Francis is also a councilor of the Center for Undergraduate Research, Washington, DC, and has been awarded several short grants to fund undergraduate research at Jackson State University. A sample of publications and conference presentations with students is given below (the student researchers are shown in bold):

Gorai, A.K., Tchounwou, P., and Tuluri, F. (2016) Association between Ambient Air Pollution and Asthma Prevalence in

Different Population Groups Residing in Eastern Texas, *Int. J. Environ. Res. Public Health* 2016, 13, 378

Tuluri, F., and **Gorai, K.** (2015). Hotspot analysis for examining the association between spatial air pollutants and asthma in New York State, USA using Kernel Density Estimation (KDE), *J of Mississippi Academy of Sciences*, April 2015, Vol 60, No. Supplemental, p 220 - 226

Tuluri, R., **Joseph Perry**, and R. Suseela Reddy. (2014). *RA Study of Regional Air Quality Trends over Gulfport Region for Association with Meteorological Parameters, and Health Impacts; at Annual Conference of Mississippi Academy of Sciences, Hattiesburg, Mississippi, (March 6 -7, 2014)*

Tuluri, F., **Butler, J., McElroy, J., Miller, D., Dallas, J., Frazier, C., and Austin, R.** (2016). Using A Versatile Smartphone-Based Online Monitoring For Detecting Strong Radiation In The Environment. Annual conference of Mississippi Academy of Sciences, Hattiesburg, MS, Feb 18 – 19, 2016

Tuluri, F., Gorai, A.K., and **Miller, D.** (2016) A GIS Study of Air Pollutants for Association with Asthma Rate in New York State. Annual conference of AMS. New Orleans, LA, Jan 10 – 14, 2016

Tuluri, R., **Vance, D.**, Reddy, R.S., Dodla, B.R., and Anjaneyulu, Y. (2013). *Regional and Long Term Variations of Air Pollutants on Air Quality over the Mississippi Gulf of Mexico Region, and Related Health Impacts; Presented at 93rd American Meteorological Society Annual Meeting, Austin, Texas (January 5 - 13, 2013)*

Francis states that his primary reason for running for a position as a counselor in P&A is to participate in the variety of institutes and workshops for faculty and

administrators offered by CUR. Additionally, professional development opportunities can also be utilized through formal and informal meetings. As a counselor, one can also interact with the community as a reviewer of the abstracts and posters submitted in the annual conference meetings. Being a councilor also helps to enhance undergraduate research in P&A by sharing the successful experiences of the peers in the field.

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)

Tenure-Track Assistant Professor in Astronomy or Planetary Science

The Department of Physics and Astronomy at Northern Arizona University is seeking excellent candidates for a tenure-track position in astronomy and/or planetary science at the Assistant Professor level beginning in August 2017 to help launch its new Ph.D. program (www.physics.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, astro-informatics, astro-chemistry, 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.

Applicants must include a CV, a statement describing teaching experience and philosophy, a statement describing research interests, a statement describing how the applicant plans to increase diversity among the students, staff, and/or faculty of the Department, 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://nau.edu/Human-Resources/Careers/Faculty-and-Administrator-Openings/>, select the link "Faculty and Administrator Job Openings," select the appropriate job title (Assistant Professor vacancy number 602693), 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 24, 2016. NAU is an AA/EO/MWDV Employer.

Your CURPA Councilors

John Armstrong, Weber State University. Integrating Research into the Curriculum Task Force, Nominations Committee, 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.

Joseph Carson, College of Charleston.

Beth Cunningham, AAPT. CURPA
Mentoring program.

Michael Jackson, Millersville University.
CUR Posters on the Hill Committee.

George Marcus, SUNY Geneseo,
Assessment.

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.

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

Terry Oswald, Embry-Riddle Aeronautical
University Daytona Beach. CURPA
Chair, Advocacy Advisory Committee,
CUR Executive Board.

Phillip Reed, Kutztown University,
Internationalization Task Force.

Toni Sauncy, Texas Lutheran University,
Program Review, Student Programs.

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

Francis Tuluri, Jackson State University,
Innovation and Collaboration Task Force.

Brian Utter, James Madison University,
Assessment.

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

Gabriel Williams, College of Charleston.

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 Rick Thompson (thompsor@mail.strose.edu). Deadline for the Winter 2017 issue is **January 13, 2017**.