Message from the Chair
Happy New Year everyone, and welcome to the spring issue of the CUR Physics & Astronomy (CURPA) Division Newsletter. Kudos to Rick Thompson for putting this edition together. It’s chock full of interesting opportunities and updates on the Division’s activities. I’d like to invite all of you to send Rick contributions for the next newsletter. Have you just established an internship program, conducted a workshop related to undergraduate research, have a new faculty position, got a new job, promotion, or award? We want to hear from you!

We owe many of the accomplishments and activities outlined below and throughout this newsletter to the leadership and enthusiasm of our previous CURPA chair, Mike Jackson. Mike has been one of the true “movers and shakers” not only of our Division, but of CUR in general for many years—and he still is. His shoes are proving awfully hard to fill!

Here’s just a glimpse of some of our Division members’ activities. John Armstrong set up our Division Facebook page a few months ago and maintains our website—check us out! Mike Jackson and John Mateja wrapped up an innovative multi-institution physics and astronomy NSF REU site program. This very successful project targeted students at two-year, predominantly undergraduate and minority-serving institutions; it involved about a dozen members of our Division as hosts. At last summer’s CUR business meeting in Tampa, Mike and John, along with mentors John Armstrong and Terry Oswalt, led a panel discussion on their experiences in the project. In a separate project, John Mateja produced a very useful set of vignettes on how to integrate research into the curriculum. BTW, he also invites Division members to nominate candidates for the 2017 CUR-Goldwater Faculty Scholars Mentor Award and to encourage students to apply for Goldwater Undergraduate Scholarships.

Mike Jackson facilitated Millersville University’s hosting of the 3rd Annual PASSHE Undergraduate Research Conference in Science, Technology, Engineering and Mathematics on Saturday, November 5, an outcome of CUR’s former NSF grant in working with State Systems. Terry Oswalt served on the external review committee for the James Madison University Physics and Astronomy Department in November—this is one of the services our Division members can provide your department. Mark Biermann facilitated the most recent “Beginning a Research Program in the Natural Sciences at a PUI” CUR Institute in Arlington, VA, November 18-20. This year we contacted all Physics Department chairs to solicit nominations for election to PA Councilor and received a very welcome number of responses.

The Division has been participating regularly in the CUR E-Board discussions. For example, our input helped assure that CUR will continue to be governed by “grass-roots representation,” i.e., via your division participation. We also provided
input for the new CUR Code of Ethics. We have been active in the CUR Advocacy Committee, exploring ways to engage federal, state and private funding sources that are not ordinarily associated with our disciplines such as DoD, NEA, NEH, NIH, state legislative contacts, Keck Foundation, etc. We could use your help identifying other opportunities.

There are several upcoming events of potential interest to Division members. First, if you haven’t voted yet, please do so before the January 31st deadline! The CUR Dialogues conference (Feb. 16 – 18 in Arlington, VA) is designed to bring faculty and administrators together with federal agency program officers and other grant funders. Attendees will also have the chance to engage in several networking opportunities. The 2017 NCUR meeting will be in Memphis, TN, April 6-8. The CUR Transforming Undergraduate Research Culture and Curricula (April 21-23, NJ) workshop will bring together teams of three to five faculty members and administrators from institutions that are interested in institutionalizing existing research activities and who are interested in developing research-rich curricula to support those goals.

The date hasn’t been set yet, but the annual Posters on the Hill event is usually in April; stay tuned for updates. Nadine Barlow and her colleagues at Northern Arizona University will be hosting the next CUR Business Meeting, June 29, July 1, in Flagstaff. NAU’s location makes for some very interesting field trip opportunities before and after the meeting.

Our Division is only as good as you make it; comments and suggestions are most welcome. If you are not currently a member, the cost to join as an individual is modest and the benefits are great; your cost is zero if your institution is an enhanced member².

Finally, if you haven’t been to a CUR or NCUR meeting in a while, please join us this year. We’ll be expecting you!

Terry Oswalt
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¹http://www.cur.org/governance/divisions/physicsastronomy_research_vignettes/
²http://www.cur.org/membership/list_of_institutional_members/

NCUR 2017

The National Conference on Undergraduate Research (NCUR), now in its 31st year, will be held at the University of Memphis from April 6-8, 2017. Upwards of 3,900 undergraduates will be presenting their research at this year’s event. Student work will be presented in oral and poster formats, as visual arts displays and in performances.

Conference registration opens on January 23, 2017, with a reduced registration fee being charged to those who register by February 19, 2017. On-site registration will be available.

This year’s plenary speakers include Frederick W. Smith, chairman, president and CEO of FedEx Corporation; Dr. Santosh Kumar, who holds the Lillian and Morrie Moss Chair of Excellence at the University.
of Memphis and whose research centers on mobile health; and Dr. Daphene McFerren, the Executive Director of the Benjamin L. Hooks Institute for Social Change at the University of Memphis whose work focuses on innovative ways to promote civil discourse on civil and human rights.

Three excursions are planned that highlight historically important aspects associated with the city of Memphis. The excursions include tours of the National Civil Rights Museum ($20), the Stax Museum and Sun Studios ($30), and Graceland ($70). This year’s Big Event on Friday is Memphis Means Music which includes a live band and barbeque ($10).

For more information about NCUR 2017, including links for registration and a draft schedule, 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 (oswatlt1@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
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**2017 Posters on the Hill**
Abstracts submitted to the Posters on the Hill event are currently under review. Over 300 completed abstracts were submitted this year, with each abstract evaluated by three reviewers. Selections should be announced at the beginning of February. The event is tentatively scheduled for April in the US Capitol, Washington DC.

Michael Jackson
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**Release of Phys21 Report**
The American Association of Physics Teachers (AAPT) and the American Physical Society (APS) have been working collaboratively to support physics departments in a variety of ways. Recently, the AAPT-APS Joint Task Force on Undergraduate Physics Programs has released a report, *Phys21: Preparing Physics Students for 21st Century Careers*, that addresses the charge “What skills and knowledge should the next generation of undergraduate physics degree holders possess to be well prepared for a diverse set
of careers?” The report provides guidance to physics departments on:

- Revising undergraduate curriculum,
- Educating a diverse student population, and
- Improving content, pedagogy, professional skills, and student engagement.

To provide a flavor of the report’s contents, I quote directly from the Executive Summary:

“Members of academic physics departments have long prided themselves on preparing undergraduate students for careers in physics. For many faculty members, a successful physics career means an academic research and teaching position like the ones that they themselves hold. However, the overwhelming majority of people who receive a bachelor’s degree in physics are employed outside academia for all or part of their careers, and are engaged in a wide variety of work. About half of this work is in the private sector, and the remainder is in colleges and universities, high schools, the military, and national laboratories. Few physics programs are explicitly designed to prepare students for this likely career outcome.

Physics departments that aspire to serve all of their students well will foster the knowledge and skills their students need to be successful in a wide range of careers. These careers may include, but are not limited to, graduate education in physics and related fields. To better prepare students in this way does not require a department to abandon the rigorous technical education that physicists take pride in. [This author’s note: The report notes the importance of undergraduate research experiences as an important component in preparing students for a variety of career pathways. The report notes the value of undergraduate research in fostering professional skills: managing a project, working in teams, developing communication skills, trouble-shooting and problem-solving (when the answer is not known in advance), etc. Including a research component in the undergraduate curriculum is essential to students’ success as they enter the workforce.] It does, however, require physics faculty members to become informed about the skills and knowledge valued by potential employers of their graduates, and departments to make appropriate modifications to curricular and co-curricular aspects of their programs.

This report is intended to help physics programs do that. It provides information about the skills and knowledge that employers of physicists are seeking, and describes ways in which physics departments can help students acquire those skills and that knowledge. Not only will departments that take up this challenge and provide the preparation their graduates need better serve all of their current students, they are also likely to attract a more diverse set of students with a broader range of career interests. In an era in which academic institutions are increasingly scrutinized regarding the return on investment that their programs provide to students (in the form of enhanced employment prospects), it is in physics departments’ interest to recognize the importance of this challenge.

This report comprises an assessment of the employment landscape that physics bachelor’s recipients are entering; a compilation of the knowledge, skills, and attitudes that graduates need for successful careers; a set of learning goals that physics departments can adopt to promote their graduates’ success; and descriptions of ways that physics departments, perhaps with assistance from industrial partners,
professional societies, and funding agencies, can ensure that those learning goals are met.”

For more information about the report and to download a copy, see http://compadre.org/jtupp/. Members of J-TUPP will be presenting more information on the report at upcoming APS and AAPT meetings. Finally, AAPT and APS are planning workshops for departmental teams based on the J-TUPP recommendations.

Beth A. Cunningham
Executive Officer, American Association of Physics Teachers

New Councilor Profiles
As a new feature this year we are including in the newsletter profiles of our newest councilors. Here is our second installment

Joe Carson
I am an Associate Professor in the Department of Physics & Astronomy at College of Charleston. I am also presently a Fulbright Scholar and Visiting Professor Ad Honorem at Observatorio Astronómico Nacional, Universidad Nacional de Colombia. My main area of research is in astronomy, specifically the direct imaging of extrasolar planets and circumstellar disks. I also carry out research in low-cost instrumentation for 3D medical imaging, including my co-leading a startup company (2015-present) in this field. Before joining the faculty at College of Charleston, I carried out postdoctoral research in exoplanet imaging and instrumentation at Max-Planck-Institut für Astronomie and Jet Propulsion Laboratory.

Over the last six and a half years I have served as research supervisor for 22 undergraduate researchers. To date, a quarter of undergraduate students working under my supervision have co-authored peer-reviewed manuscripts as a direct result of their project work. I have served on the College of Charleston’s Committee for Undergraduate Research and Creative Activities as well as led program assessment for my department’s capstone undergraduate research requirement.

I hope that my role as a CUR Councilor will enable me to help increase undergraduate research opportunities for students at myriad institutions, help support efforts to enact effective undergraduate research mentorship, improve diversity of student populations carrying out undergraduate research, support efforts to lobby for undergraduate research support, and improve my own understanding of how I may best serve as an advocate for the aforementioned efforts.

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)

Assistant Professor of Physics, Juniata College

The Physics Department at Juniata College, located in Huntingdon, PA, invites applications for a fixed-term Assistant Professor for up to 3 years, subject to annual renewal, starting in August 2017. For further details and to submit an application, please visit http://www.juniata.edu/jobs

Your CURPA Councilors
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, Juniata 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 Oswalt, 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, Bucknell University, Assessment.
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 Spring 2017 issue is **April 3, 2017**.