Announcement: The University of Missouri (MU) Department of Physics and Astronomy will host a Research Experience for Undergraduates (REU) Program, Materials and Modeling, supported by a grant from the National Science Foundation. MU has a very strong research program in this area, which includes both condensed matter physics and biophysics. The undergraduate student interns will be able to choose from a diverse array of topics depending on their interest and ability. The topics will include experiments, theory, and modeling and span a variety of research projects (see https://physics.missouri.edu/undergrad/reu-projects/) with a good balance between experimental, numerical, and analytical components.

General Information: The Office of Undergraduate Research coordinates a number of summer research programs for undergraduates, including this REU. All programs run for 9 weeks (Wednesday, June 1 - Friday, July 29), with travel days being Tuesday, May 31 and Saturday, July 30. Students selected for these programs live in on-campus, air-conditioned housing (double rooms), and receive a meal plan, covered by the program. Summer interns also receive one hour of academic/research credit, travel to and from Columbia, and a stipend of $4500.

Funds are available for approximately 10 non-MU students. An additional 70+ undergraduates from MU or in other programs will participate in all research and educational programming activities, creating a vibrant community of undergraduate researchers. Students will work on their own research project under the guidance of an MU faculty mentor and present their results at a poster forum at the end of the summer program (July 28). Students become part of a research team that typically includes other undergraduate students, graduate students, lab technicians, and post-doctoral researchers. With 1,000 faculty members, over fifteen academic departments, and eight interdisciplinary programs and centers (all focused on the life sciences), MU is a great place for undergraduates preparing for a challenging career in physics and other sciences research and education. Our Columbia campus includes schools and colleges of Arts & Science; Agriculture, Food & Natural Resources; Engineering; Health Professions; Medicine; and Veterinary Medicine -- all within walking distance. MU is home to the nation’s largest (10MW) nuclear reactor found on a college campus. The MU Research Reactor (MURR) provides advanced research opportunities for students and faculty in the neutron-related sciences and engineering and is an excellent facility for radiochemistry research.

Summer program alumni have entered graduate programs at University of California-Irvine, University of California-San Diego, University of Chicago, University of Colorado, Indiana University, Iowa State University, University of Michigan, University of Missouri, Purdue University, University of Virginia, Washington University in St. Louis, and the University of Wisconsin.

The Campus and Community: MU, the flagship campus of the University of Missouri system, is home to more than 34,700 students (7,700 in graduate and professional programs) and 2900 faculty. Columbia, midway between St. Louis and Kansas City, is a vibrant community with a population of more than 113,000. Columbia offers most of the benefits of large cities (restaurants, art, theater, music, and a variety of churches) and yet maintains the atmosphere and convenience of a small, diverse college town. There are numerous trails for walking, running, and biking, and a variety of city and state parks nearby.

Eligibility: Applicants are expected to have completed at least two years of full-time college enrollment prior to June 2016 (exceptional students who have completed one year may be considered) and be pursuing a major in physics, engineering, biophysics or related fields. Students graduating prior to December 2016 are not eligible. Students must be citizens or permanent residents of the U.S. A minimum GPA of 3.0 (on a 4.00 scale) is required. This includes both a 3.0 or greater for the overall GPA and a 3.0 or greater for science and math courses. Participants must have completed calculus-based physics by the start of the program.

Application Information: The deadline for applying to these programs is Monday, February 15, 2016. Students must complete the attached application form and provide an unofficial transcript (including fall 2015 grades); at least one letter of recommendation (two preferred); a personal statement including career plans, prior research experience (if
any), and statement of research interests; and a resume. Completed application packets should be sent to Office of Undergraduate Research, 150 Christopher S. Bond Life Sciences Center, University of Missouri, Columbia, MO 65211. FAX: 573-884-9395. General questions can be directed to Assistant Director Michael Cohen (CohenME@missouri.edu, 573-882-4818). Questions about physics projects or faculty can be directed to Dr. Karen King (KingKar@missouri.edu).

**Educational Programming:** In addition to their research work, students participate in a full series of evening seminars and small group sessions designed to provide them with information about research, career preparation and options, and scientific ethics. Speakers from previous years have included MU faculty, a scientist from the Stowers Medical Institute, members of the National Academy of Science, clinical oncology researchers, science teachers, directors of graduate programs, and other scientists. Weekly small group seminars provide opportunities for students to focus on a topic and engage in discussion with peers and faculty members. These specialty discussions are open to all students, regardless of program affiliation. Small group seminar topics have included evolution, animal locomotion, science communication, applying to graduate school, professional skill development, and learning to read scientific literature. Social activities also provide opportunities for participants to get to know each other and other members of the MU science community. A mandatory orientation session that includes team-building activities is scheduled for Wednesday, June 1.

**Faculty Mentors:** Students should list up to 5 faculty/projects that they are interested in working with on their application. A short list of projects is listed below, with a full description of the projects and faculty mentors available at http://physics.missouri.edu/undergrad/reu-projects. Additional information can be found at https://physics.missouri.edu/people.

<table>
<thead>
<tr>
<th>Faculty Mentor</th>
<th>Project description</th>
<th>Research</th>
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<tbody>
<tr>
<td>Dr. Shi-Jie Chen</td>
<td>Modeling RNA folding</td>
<td>Theoretical</td>
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<tr>
<td>Dr. Suchi Guha</td>
<td>Charge transport in polymer-based transistors</td>
<td>Experimental</td>
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<td>Dr. Kattesh Katti</td>
<td>Nanotechnology for alternate energy sources</td>
<td>Experimental</td>
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<td>Dr. Gavin King</td>
<td>Single molecule approaches to membrane proteins</td>
<td>Experimental</td>
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<td>Dr. Ioan Kosztin</td>
<td>Molecular dynamics: water transport in channel proteins</td>
<td>Theoretical</td>
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<td>Dr. Aigen Li</td>
<td>Optical and thermal properties of solids in space</td>
<td>Theoretical</td>
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<td>Dr. Paul Miceli</td>
<td>X-ray studies of nanostructured metals grown on silicon</td>
<td>Experimental</td>
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<td>Dr. Peter Pfeifer</td>
<td>Alternative fuel technology</td>
<td>Experimental</td>
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<td>Dr. Sashi Satpathy</td>
<td>Computational condensed matter physics</td>
<td>Theoretical</td>
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<td>Dr. Deepak Singh</td>
<td>Nanofabrication of magnetic memory data storage device</td>
<td>Experimental</td>
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<tr>
<td>Dr. David Singh</td>
<td>Computational modeling and design of materials</td>
<td>Theoretical</td>
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<tr>
<td>Dr. Angela Speck</td>
<td>Modeling star dust formation</td>
<td>Theoretical</td>
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<tr>
<td>Dr. Haskell Taub</td>
<td>Neutron scattering studies of model membranes</td>
<td>Experimental</td>
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<tr>
<td>Dr. Giovanni Vignale</td>
<td>Spin-orbit interaction at oxide interfaces</td>
<td>Theoretical</td>
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<tr>
<td>Dr. Ping Yu</td>
<td>Pulse laser and ultrasound detecting of nanomaterials</td>
<td>Experimental</td>
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<tr>
<td>Dr. Xiaoqin Zou</td>
<td>Modeling bio-molecular interactions</td>
<td>Theoretical</td>
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**Office of Undergraduate Research**

For more information about the summer opportunities for undergraduate research at MU, visit the website http://undergradresearch.missouri.edu/
University of Missouri 2016 Summer Internship Application
Research Experience for Undergraduates in Physics: Materials and Modeling

Name__________________________________________

College/University________________________________

Major__________________________________________

Current Grade Level
☐ Sophomore   ☐ Junior   ☐ Senior

Date of Graduation
☐ Spring 2017   ☐ Spring 2018   ☐ Other_________

Date of Birth_____________________________________

Gender: ☐ Male       ☐ Female

Citizenship: ☐ United States ☐ Other _______________

Permanent Resident of the U.S.? ☐ Yes   ☐ No

Resident of Missouri?
☐ Yes (eligible for in-state tuition)   ☐ No

Racial/Ethnic Background(optional)_____________________

E-Mail Address______________________________________
[print clearly so we can contact you!]

Phone________________  Cell Phone __________________

Permanent Address/Zip Code/Phone

________________________________________________

________________________________________________

________________________________________________

Eligibility:
Acceptance to the program is competitive. At a minimum, students must:

• have completed at least two years of full-time college enrollment prior to June 2016 and be entering their junior or senior year of college (outstanding students who have completed one year full-time may be considered)
• be pursuing a major in physics, engineering, biophysics or related fields
• be citizens or permanent residents of the U.S.
• have earned a minimum GPA of 3.0 (on 4.00 scale) including both overall GPA and science/ math GPA
• have completed calculus-based physics by the start of the program
• be interested in physics, including a possible career in physics

Students graduating prior to December 2016 are not eligible.

Please review the faculty listings at the physics departmental web site:
http://physics.missouri.edu/reu-projects/

List below 5 MU faculty members (in order of preference) whose research is of interest to you. Please check the application information to ensure that the faculty you list are participating in the program!

1 ____________________________________  
2 ____________________________________ 
3 ____________________________________ 
4 ____________________________________ 
5 ____________________________________

Questions concerning projects and/or mentors should be directed to Dr. Karen King (KingKar@missouri.edu), MU Department of Physics & Astronomy.

How did you learn of our program?

☐ faculty or other school official

☐ NSF REU Website

☐ internet search

☐ conference attendance (SACNAS, ABRCMS, etc.)

☐ other
Courses: Fall Semester 2015

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<tr>
<th>Dept.</th>
<th>Title</th>
<th>Credits</th>
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Winter/Spring (current) Semester

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Overall GPA: __________ on a __________ scale.

Previous Research Experience

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Educational and Career Plans after Graduation

_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________

Plans for advanced degree(s): □ MA/MS □ PhD □ MD □ MD/PhD □ Unknown □ Other

Brief Summary of your Research Interests for this summer and beyond

_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________

Other comments:

_________________________________________________________________________________
_________________________________________________________________________________

How did you learn about our summer program? ________________________________

Please include an unofficial transcript, personal statement, resume, and at least one letter of recommendation from a science faculty member (someone who has taught you or with whom you have worked). Two letters of recommendation are preferred. Although the Office of Undergraduate Research prefers letters be sent with the completed application, we will accept letters of recommendation sent directly to our office. A resume is very helpful. If you handwrite your application, please PRINT CLEARLY.

Please return your application to Office of Undergraduate Research, 150 Bond Life Sciences Center, University of Missouri, Columbia, MO 65211. (Fax: 573-884-9395 or email: ugr@missouri.edu)

The deadline is Monday, February 15, 2016.