

The Stylized “How to” Guide You Didn’t Know You Needed Brought to you by the ND Society of Physics Students

Is undergraduate research right for me?

Do you want to make meaningful contributions to the scientific community? Are you curious about the deeper mysteries of nature? Do you want to get into graduate school? Then the short answer is yes!

Why should I participate in research as an undergraduate?

Undergraduate research is a great opportunity to develop vital skills for those interested in pursuing a career in the physical science. It’s fun and extends your undergraduate learning experience outside of the classroom. Plus, it looks great on your resume!

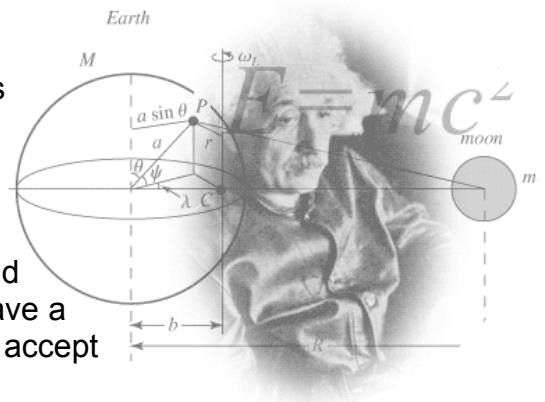
How can I get involved?

Excellent question! At Notre Dame you have many opportunities for participating research both during the school year and during the summer. For example:

1. Many students help professors with various projects here at ND. The brunt of the work of getting involved in research falls on you. Look up professors and their research projects at <http://physics.nd.edu/people/faculty/>. ND professors do research in a huge variety of fields and will appreciate undergraduates who are interested in their research. Now, not all professors will be able to support an undergraduate, so you may need to get in contact with several professors before finding one with the right project for you. Additionally, you should email Prof. Jacek Furdyna, the director of undergraduate research. He might know of a professor looking for someone like you!

(Bonus hint: many modern Physics research projects demand a certain degree of programming proficiency, so early on your options might be a bit limited, but don’t let that deter you!)

2. Apply for a Research Experience for Undergraduates (REU). REU’s are NSF sponsored summer programs at various campuses across the country that provide students with valuable, dedicated research experience (and a stipend!). Positions in these programs are highly sought after, and competition can be stiff (underrepresented groups have a slight edge here), but some programs will even accept



freshman, so it's always worth a shot to apply to a few with projects you find interesting. You can search for REU sites at <http://www.nsf.gov/crssprgm/reu/>. You may be tempted to only look at the physics REU's, but check out Materials Science REU's because they often have great projects for physics students as well. Applications generally require some personal information, a statement of interest, transcripts, and recommendations and are usually due in early February. It's best to start applications early (maybe over winter break), as it is courteous to give your recommenders adequate time to think over exactly how to best express just how wonderful a student/ researcher you are.

3. Apply for the Notre Dame Physics Research Experience for Undergraduates (REU). ND's REU is a great, close to home option for research, especially if you already have a research project with a professor (see 1 above). Information about the program can be found at <http://physics.nd.edu/research/reu/>. Unfortunately, the ND REU program will not use NSF funds to sponsor students from ND for the summer, so you must go to outside sources for funding. One option is the College of Science- Summer Undergraduate Research Fellowship (COS-SURF). You will probably get emails about this opportunity, so don't ignore them... and if you do, go to:

<http://science.nd.edu/research/undergraduate-research/opportunities/on-campus/> for further information about specifics and applying. COS-SURF is largely designed for students who already have a research project ongoing, so you must submit a "meaningful research proposal".

4. Apply for internships from other sources like SULI, SR-EIP, and NASA. SULI (Science Undergraduate Laboratory Internships) is basically like an REU, but you will spend your time at a research lab rather than a university, and funding comes from the Department of Energy. Similarly, SR-EIP (Summer Research- Early Identification Program) operates like an REU but was established by the Leadership Alliance. This program is designed primarily for traditionally underrepresented students, and offers opportunities at many Ivy League and otherwise prestigious universities. Unfortunately, though it offers great programs, NASA suffers from occasional budget issues, so you have to check what's available from year to year. Beyond these examples, some universities even offer their own, unique internship programs. If you really want to spend the summer at a certain school that doesn't have an REU program, do some googling and you will most likely find funding through a different research internship program. Check out:

<http://science.energy.gov/wdts/suli/>

<http://www.theleadershipalliance.org/tabid/242/default.aspx>

<https://intern.nasa.gov/>

5. A dose of reality- if you are a freshman, don't be afraid to apply to REU's or other internships, just be aware that your options might be slightly more limited than an upperclassman's. Look for REU's that state explicitly that they accept freshman- most won't accept freshman without some really spectacular skills in programming, electronics, or advanced class credits. However, it is worth noting that as a Notre Dame student, this disadvantage will not hold you back if you apply to the Notre Dame REU. If you can find funding and a professor who will take you, you should definitely apply to the ND REU even as a freshman. Bottom line: it helps if you start asking around and working for a professor even as late as the spring semester; once you've demonstrated your indispensability, you can bring up working with them over the summer through the REU.

