Physics Undergraduate Research Information Session

September 11, 2019
Agenda

• Research areas in our department
• Overview of undergraduate research
• Student Panel
Research in the CU Physics Department

• Experimental, Computational, and Theoretical
• Fundamental, Applied, Interdisciplinary
• Small groups, large collaborations
Atomic, Molecular, and Optical Physics

Ultra-cold
(cold atoms and molecules)

Ultra-precise
(atomic clocks)

Ultra-fast
(Femto-second lasers)
Geophysics

Modeling the Earth’s core

Seismology

Image: Ed Garner, ASU
Biophysics

Measuring forces in RNA

Protein folding
Liquid Crystals
Nuclear Physics

Quarks and gluons at national colliders
Tools and practices of physicists and physics education.
Plasma Physics

Fusion Plasmas

Space Plasmas
High Energy Physics

Neutrinos in Japan

Large Hadron Collider
Overview of Undergraduate Research

• Explore website – Go to colorado.edu/physics
  • Academics
    • Undergraduate research opportunities

• http://www.colorado.edu/physics/academics/undergraduate-students/undergraduate-research-opportunities
Course credit

From advising guide:

PHYSICS — PLAN 1

PHYSICS ELECTIVES & RESEARCH.......................... 9 CREDIT HRS

With a combination of research activity and physics electives, you can satisfy this requirement by completing one of the following options:

- **Option 1**
  - PHYS 4430: Advanced Laboratory (3)
  - AND
  - Physics Electives (6) *see next page for selection of physics electives*

- **Option 2**
  - No credit research experience (0)
    - Documentation of your accomplishments as an intern with a research group in the Physics Department or a suitable cognate department. Approval by a Physics faculty advisor is required and should be obtained in advance.
  - AND
  - Physics Electives (9) *see next page for selection of physics electives*

- **Option 3**
  - Research credit (3-6):
    - PHYS 4610/4620/4630: Physics Honors (2) (may be repeated, up to 6 credits)
    - PHYS 4840: Independent Study (1-3) (may be repeated, up to 6 credits)
  - AND
  - Physics Electives (3-6) *see next page for selection of physics electives*

*Maximum of 6 credit hours from a combination of PHYS 4610/4620/4630 and PHYS 4840 can be counted for Physics Electives.*
Hi, I have to do research to graduate. Can you help me fulfill this requirement?
Dear Prof. Einstein,

My name is Ralphie Buffalo and I am a sophomore physics major here at CU. I am interested in your research and would like to ask if you would be available for a meeting to discuss my potential for joining your lab as an undergraduate researcher. I am interested in applying for a UROP fellowship and working approximately 10 hours/week during this academic year.

I have taken PHYS 1110, 1120, and 1140 and am enrolled in PHYS 2170 and 2150. My GPA is 3.7 and I have earned As in all of my physics courses. I have attached my current CV.

I am especially interested in your research because I like the hands-on nature of experimental physics and would like to learn about vacuum systems. I look forward to hearing from you soon.

Sincerely,
Ralphie Buffalo
Strategies

• To improve your chances at finding a position
  • Work hard in your classes
  • Attend research seminars (“talks”)
  • Get involved in the department
    • LA program
    • CU-Prime (talks every other Tue at 5pm)
    • Society of Physics Students (every Wed at 5pm)
Questions?