Physics Undergraduate Research Information Session

November 5, 2025

Agenda

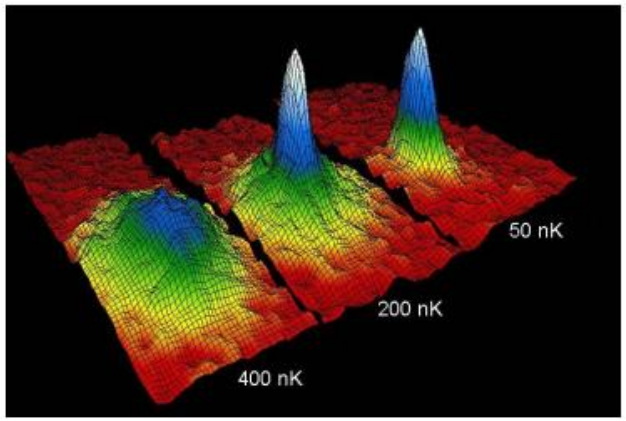
- Research areas in our department
- Overview of undergraduate research
- Student Panel

Research in the CU Physics Department

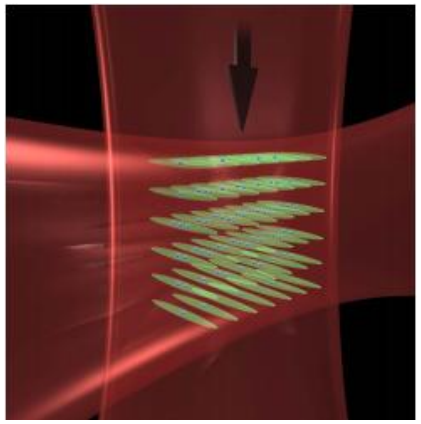
- Experimental, Computational, and Theoretical
- Fundamental, Applied, Interdisciplinary
- Small groups, large collaborations

Atomic, Molecular, and Optical Physics

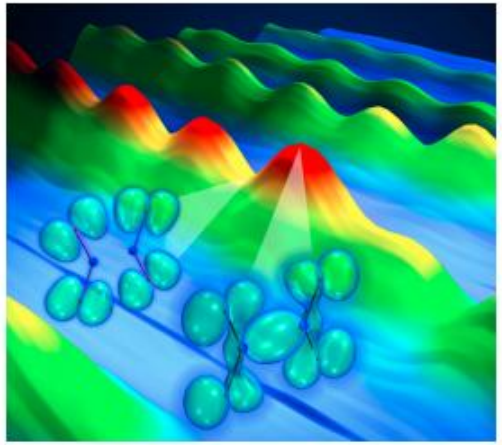
Ultra-cold
(cold atoms and molecules)



Ultra-precise
(atomic clocks)

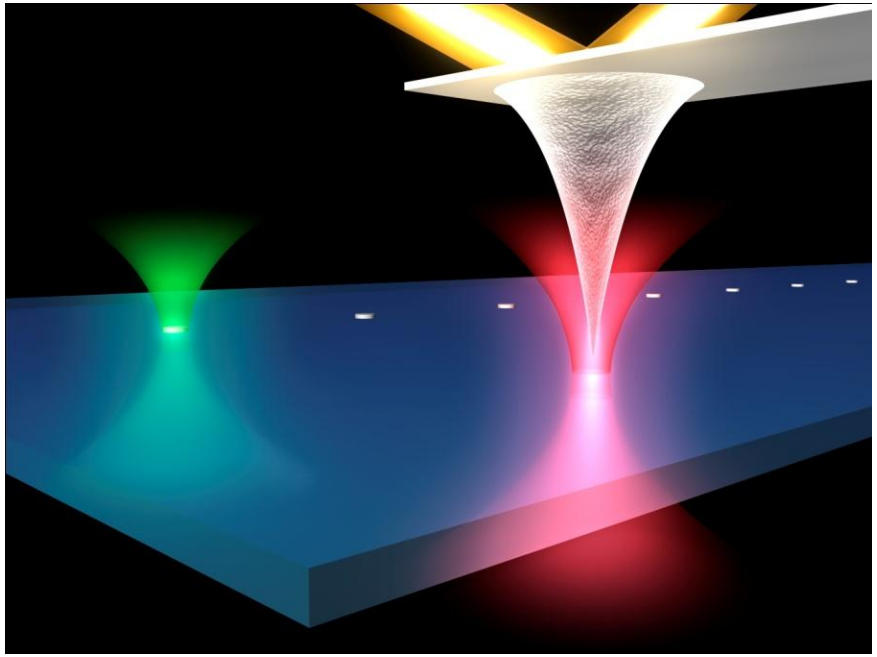


Ultra-fast
(Femto-second lasers)

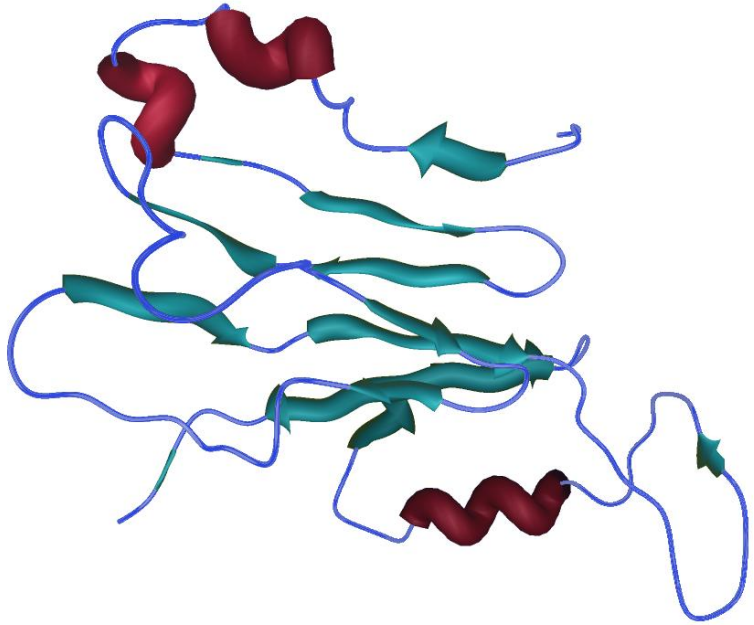


Biophysics

Measuring forces in RNA

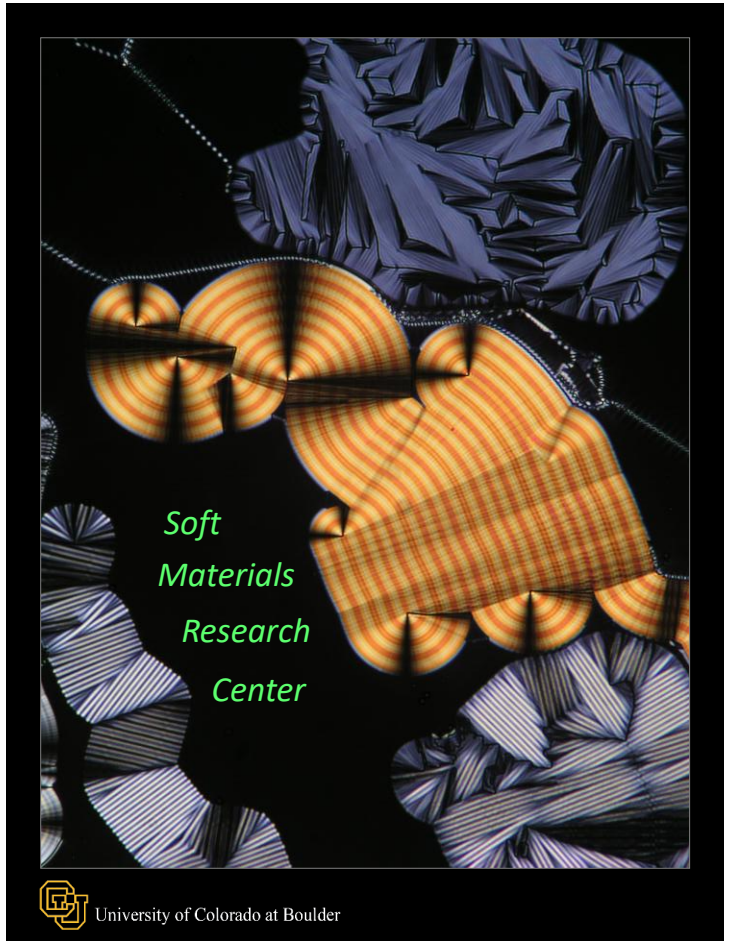


Protein folding

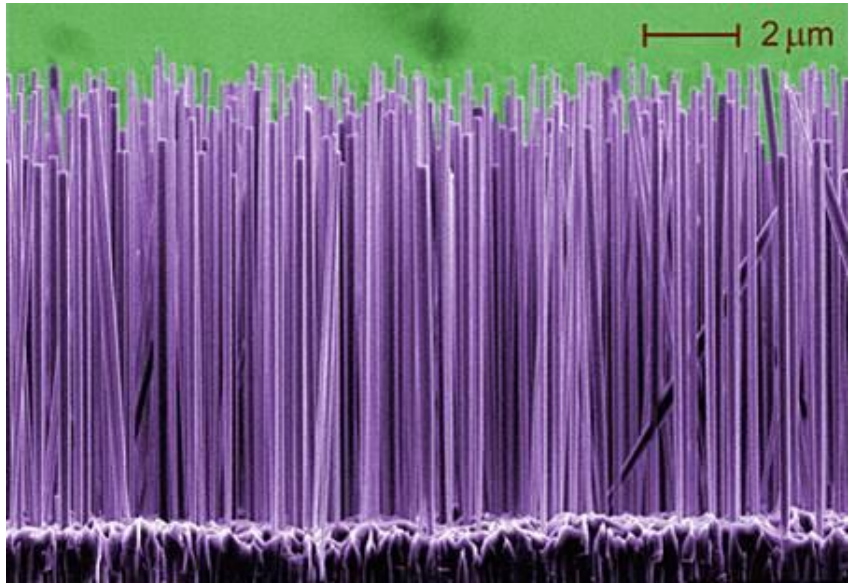


Condensed Matter

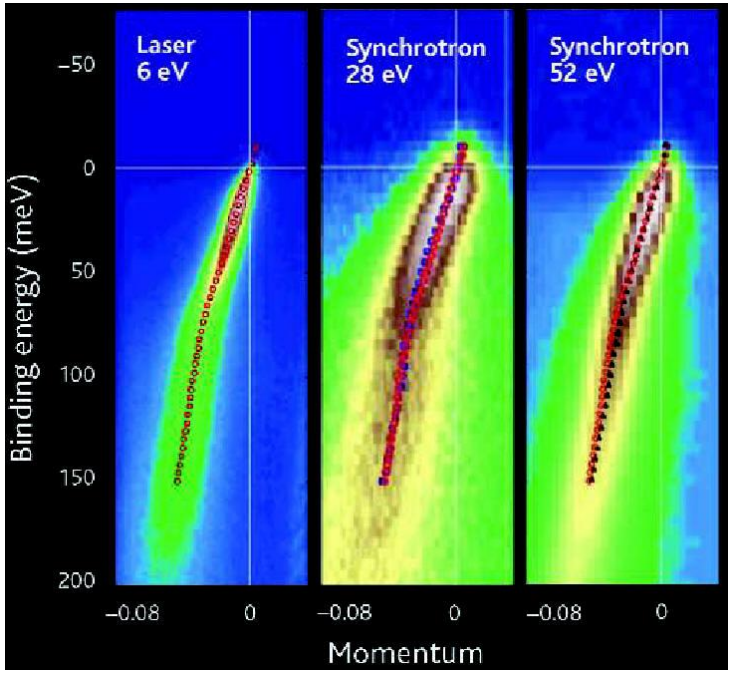
Liquid Crystals



Nanowires

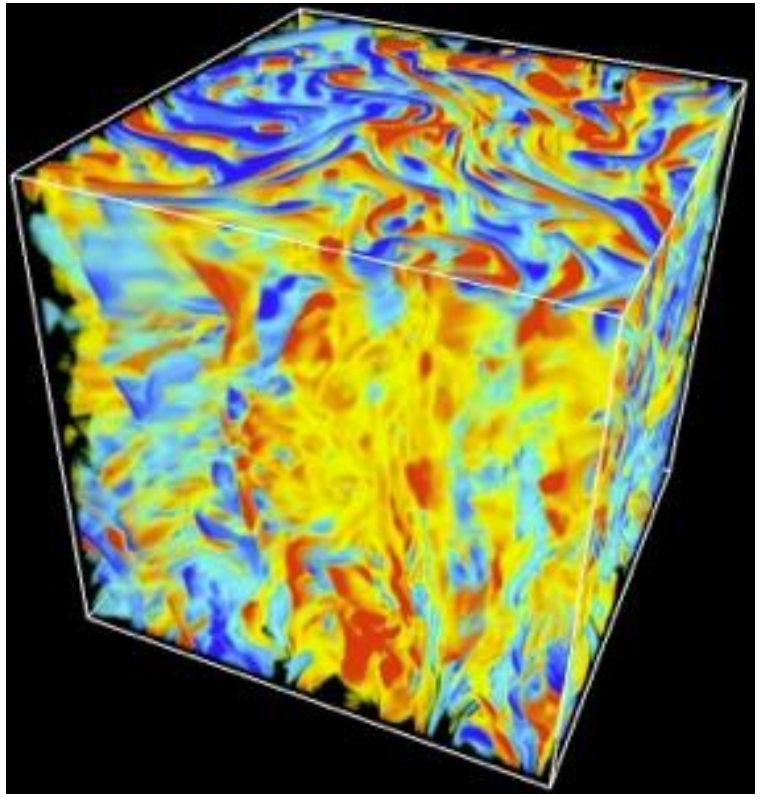


Superconductors

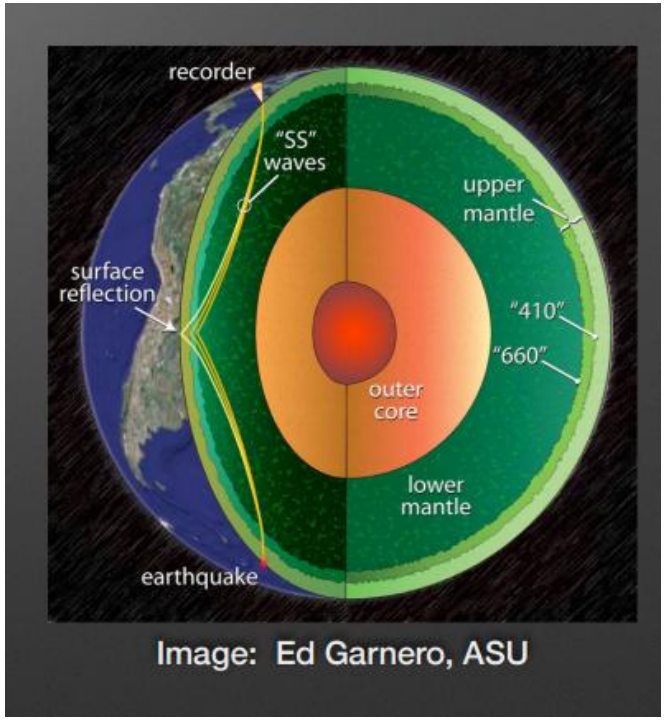


Geophysics

Modeling the Earth's core

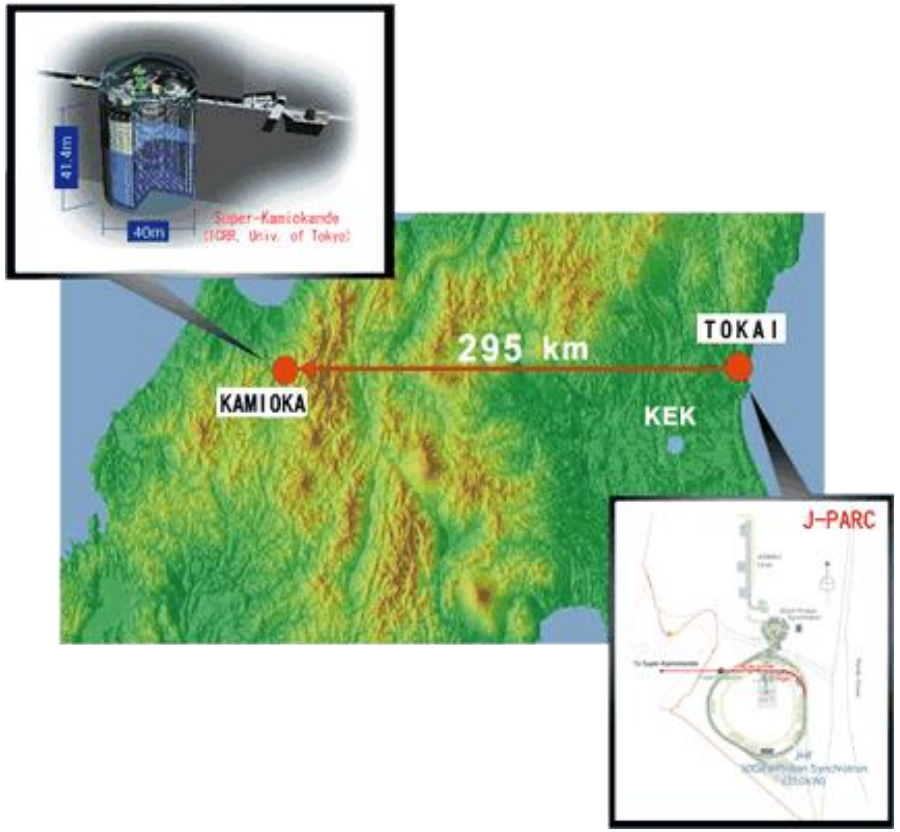


Seismology

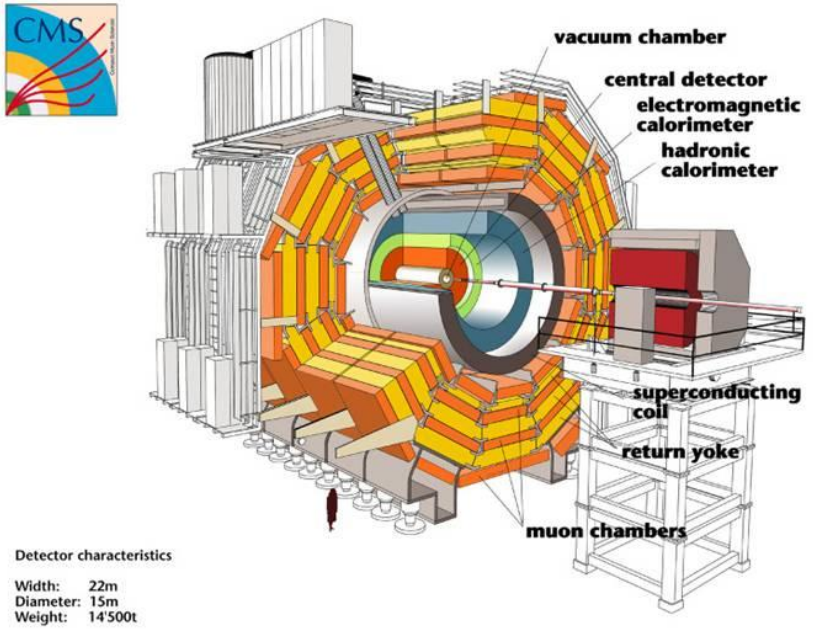


High Energy Physics

Neutrinos in Japan

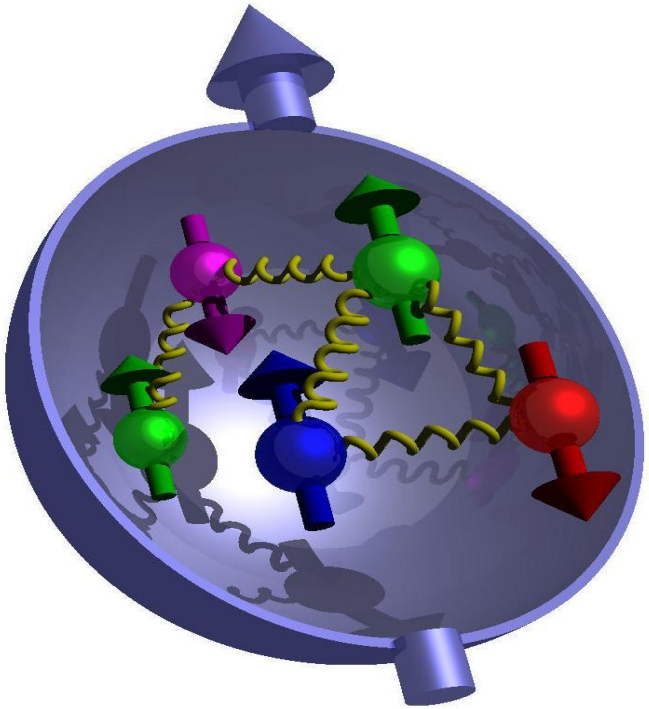


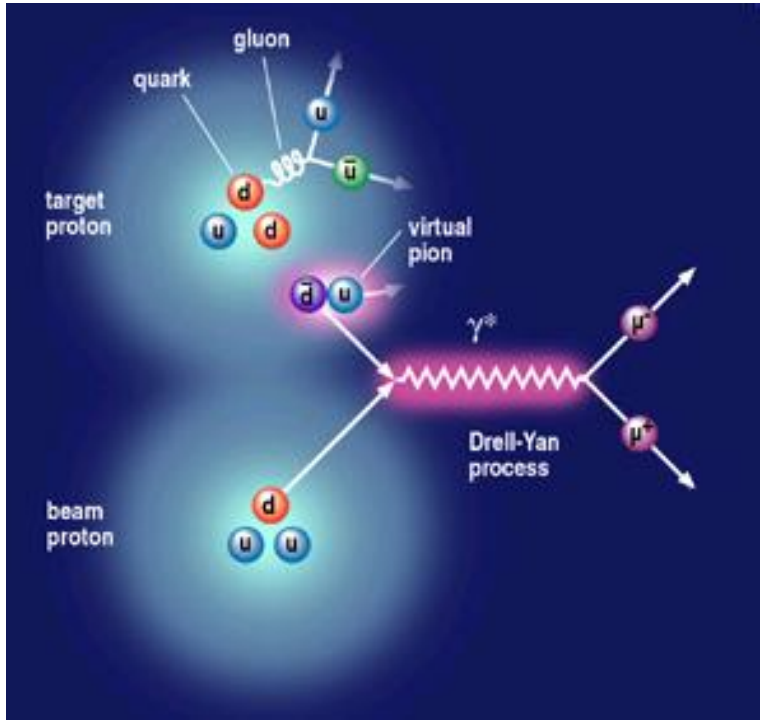
Large Hadron Collider



Nuclear Physics

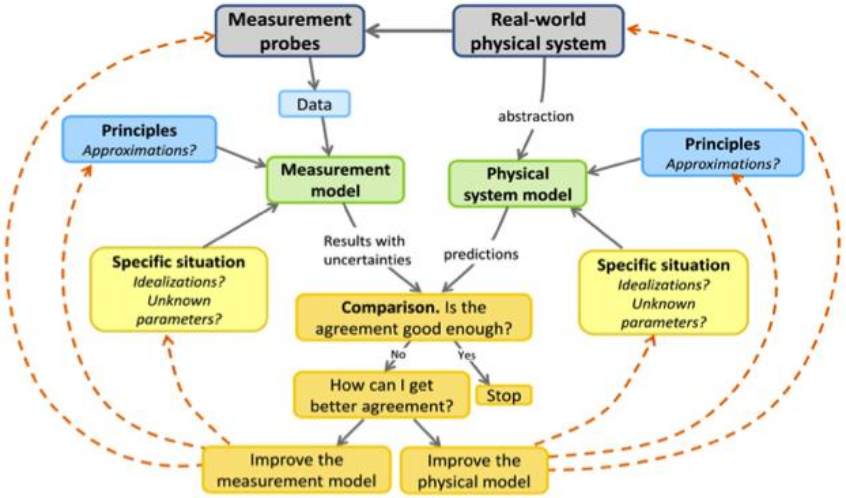
Quarks and gluons at national colliders





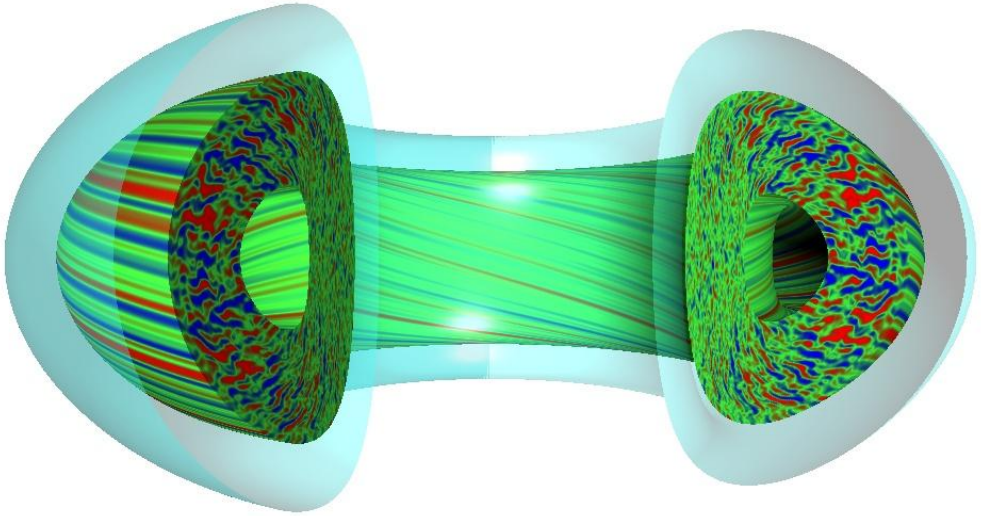
Physics Education Research

Tools and practices of physicists and physics education.

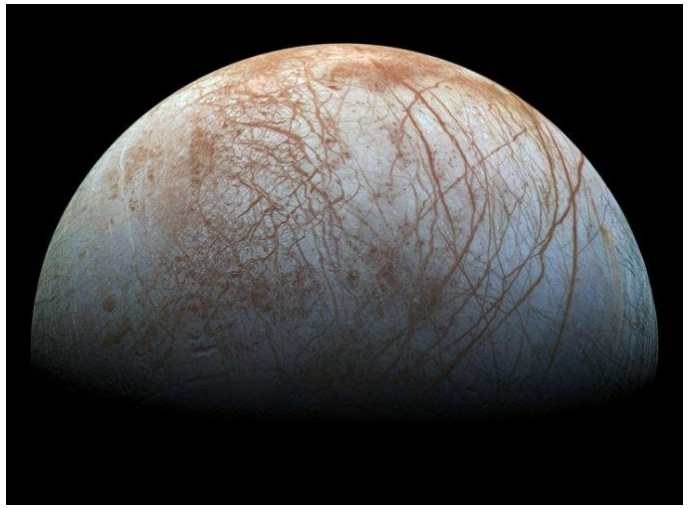


Plasma Physics

Fusion Plasmas



Space Plasmas



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

Research Requirement

From advising guide:

RESEARCH REQUIREMENT

Choose ONE of the following two options:

☐ Option 1

Complete 3 or more credit hours from the following:

- Physics Honors (2, can be repeated) *
- Independent Study (1-3, can be repeated) *
- PHYS 4430 Advanced Laboratory (3) *
- PHYS 4700 Quantum Forge I (3) *

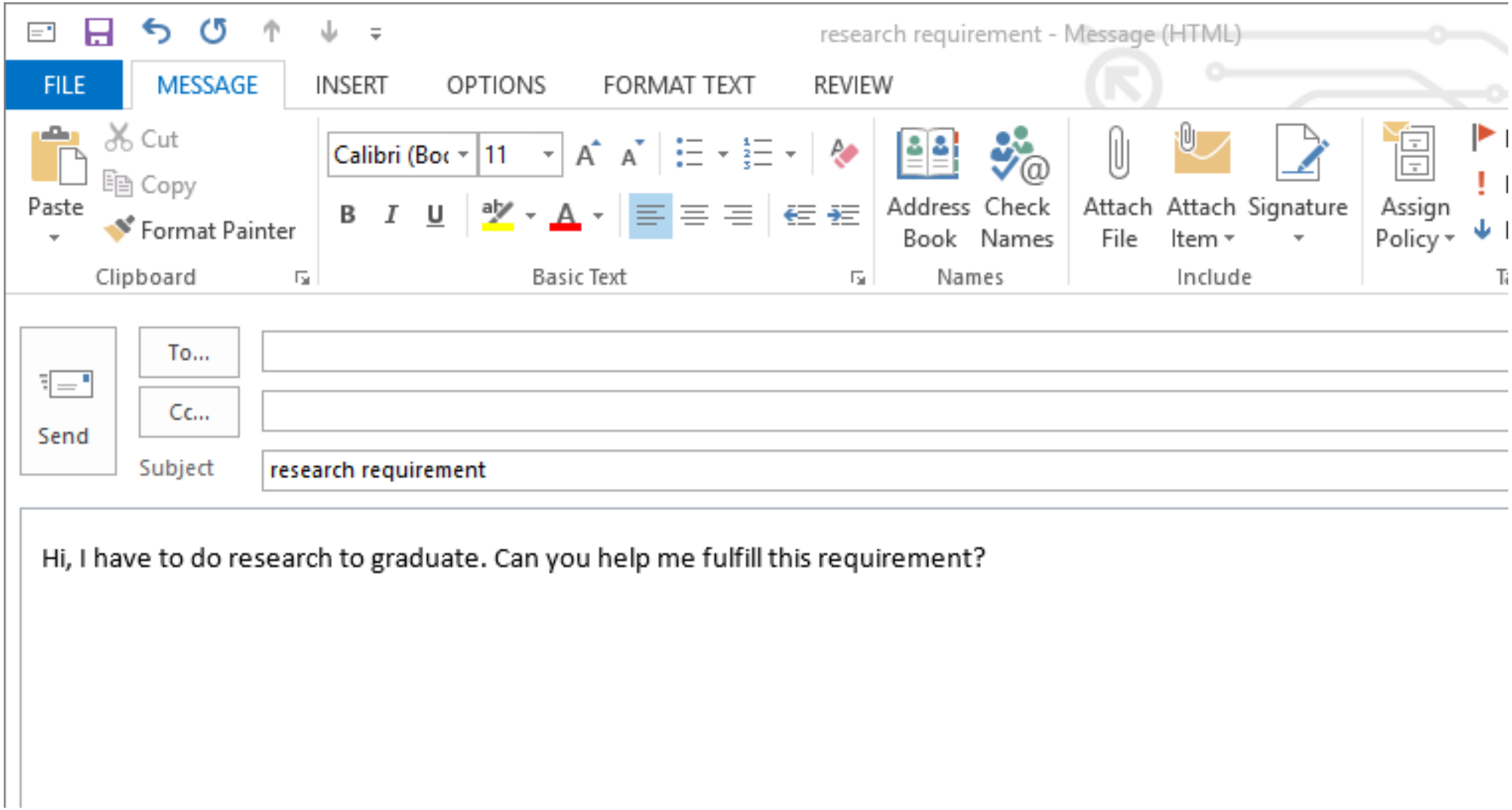
☐ Option 2

No credit research experience:

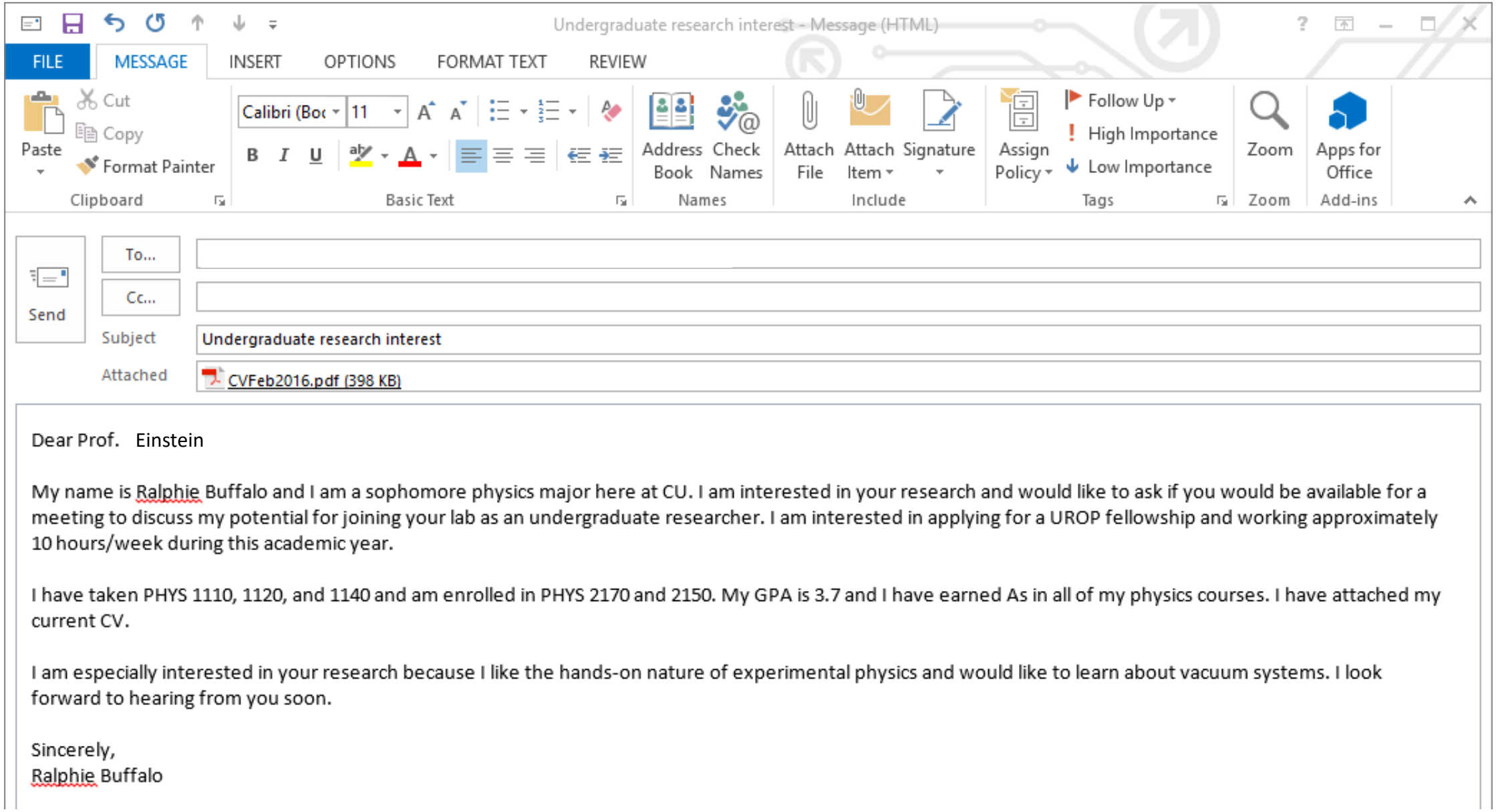
- Documentation of your accomplishments as an intern with a research group in the Physics Department or a suitable cognate department. Approval by a Physics faculty advisor is required and should be obtained in advance.

IMPORTANT! Courses on this page marked with * will ALSO double-count as a Physics Elective

What NOT to do!



Much better…


Undergraduate research interest - Message (HTML)
FILE
MESSAGE
INSERT
OPTIONS
FORMAT TEXT
REVIEW
Paste
Cut
Copy
Format Painter
Clipboard
Calibri (Bo
11
Basic Text
Address Book
Check Names
Names
Attach File
Attach Item
Signature
Include
Assign Policy
Follow Up
High Importance
Low Importance
Tags
Zoom
Zoom
Apps for Office
Add-ins
Send
To...
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Subject
Undergraduate research interest
Attached
CVFeb2016.pdf (398 KB)
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
    - COSMOS
    - CU-Prime (talks every other Tue at 5pm)
    - Society of Physics Students (every Wed at 6pm)
  - Don’t be afraid to look outside the department
    - https://www.colorado.edu/engineering/students/research
    - https://www.colorado.edu/artsandsciences/research/student-resources/undergraduate-student-resources/student-funding-opportunities

Questions?