

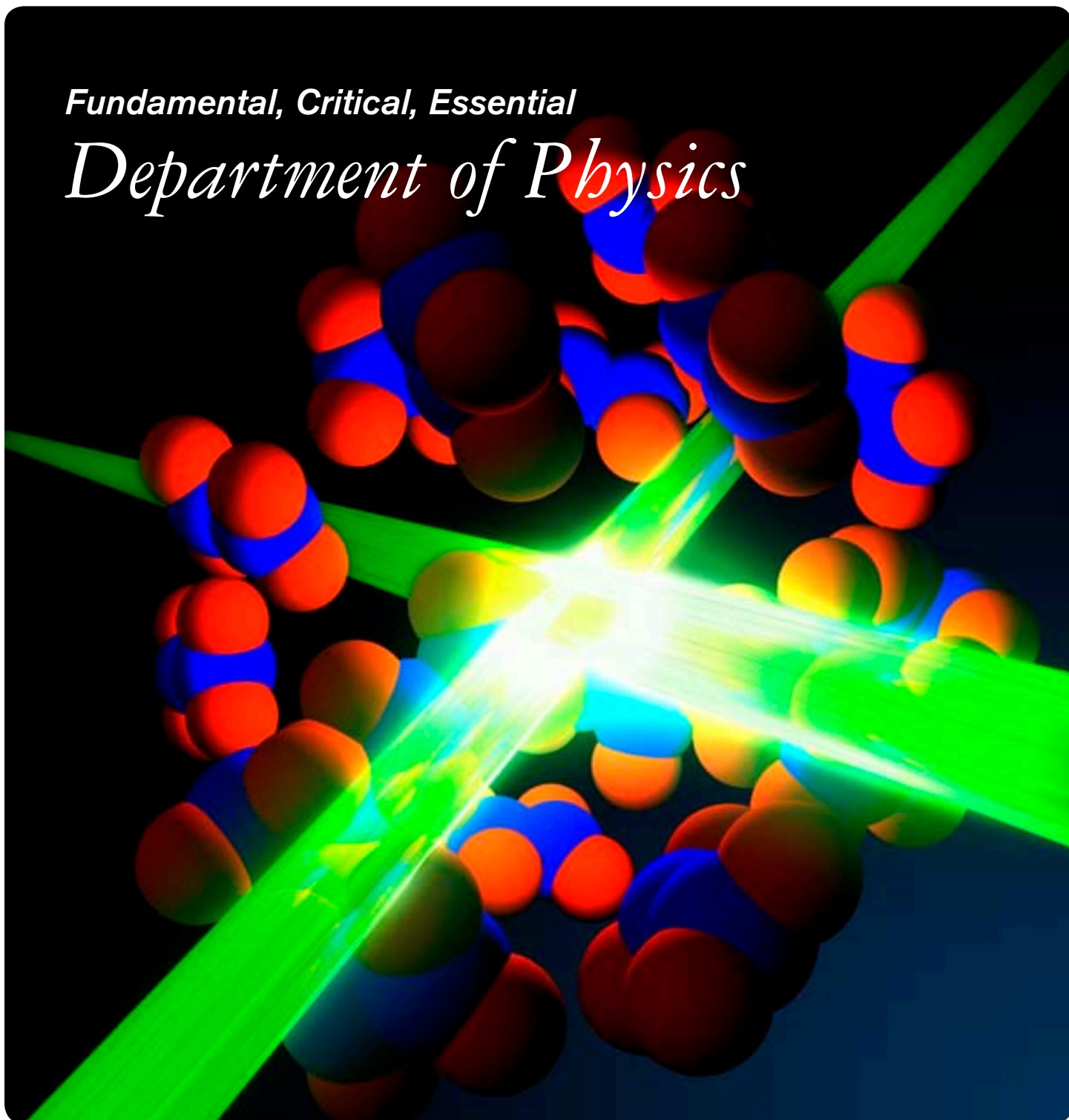
Creating Futures

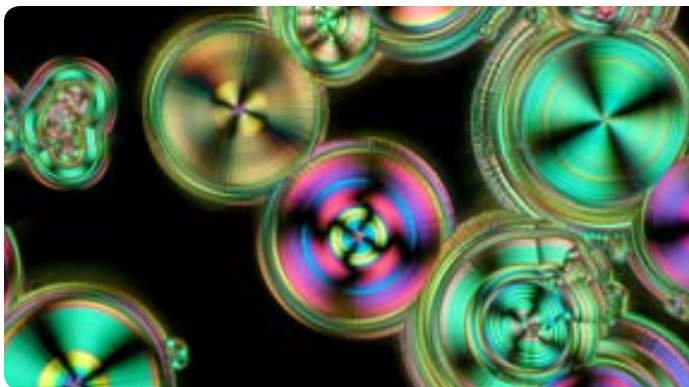
University of Colorado *at Boulder*



Fundamental, Critical, Essential

Department of Physics





Left: Domains of a smectic liquid crystal showing off their birefringence colors.

An Extraordinary Record of Success

The Department of Physics at the University of Colorado at Boulder is internationally renowned for outstanding teaching, research, and service. Strategic investment by the university and decades of visionary recruitment have placed the Department of Physics at the forefront, with accomplished faculty devoted to undergraduate and graduate research and education.

Your support can enhance this program further, and ensure the superior quality, value, and impact of CU-Boulder Physics for the future. Our physicists have provided fundamental scientific research on which much of our society depends. An investment in physics is an investment in the future.

Our strengths include:

Excellent Reputation

- Top-10 physics program among public universities (*U.S. News & World Report*), top 20 overall—among the highest-ranked of CU-Boulder’s programs
- #1 program in the world in atomic, molecular, and optical physics
- Recognized as one of CU-Boulder’s leading departments in research *and* teaching

*Buckley Prize-winning professor **Noel Clark** is a leading researcher in the areas of liquid crystal and soft condensed matter physics.*



Award-Winning Faculty

- **Three Nobel Laureates** (Eric Cornell, 2001; Carl Wieman, 2001; John Hall, 2005)
- **Two MacArthur Fellows** (Deborah Jin, Margaret Murnane)
- **Six members of the National Academy of Sciences** (Noel Clark, Eric Cornell, John Hall, Deborah Jin, Margaret Murnane, Carl Wieman)
- Since 2000, 14 faculty members have won the leading national research awards in their field

Program Growth

- One of America’s largest undergraduate and graduate physics programs, with 400+ undergraduates and 200+ doctoral students
- CU-Boulder’s largest PhD program
- More than 75 percent increase in undergraduate and graduate enrollment within a decade



Mike Dubson, award-winning physics educator

Breadth of Programs

- Coursework and research that spans most areas in physics including: atomic, molecular, and optical physics, elementary particle physics, condensed matter physics, plasma physics, geophysics, nuclear physics, biophysics, physics education research, and history and philosophy of physics
- Bachelor’s degrees offered both through the College of Arts & Sciences and the College of Engineering and Applied Science

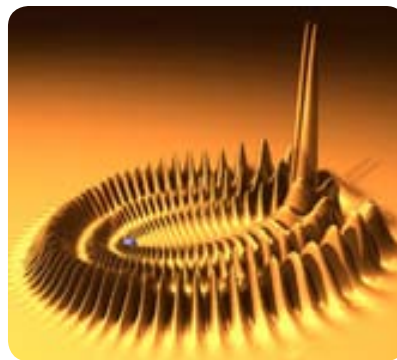
Cover image: Crossed laser and x-ray beams reveal how electrons form chemical bonds in molecules.

Research with Broad Application

- Recent research breakthroughs in lasers, atomic physics, atomic clocks, liquid crystals, materials science, plasma physics, environmental science, high-energy physics, nuclear physics, DNA dynamics, and physics learning

Collaborations with Centers/Institutes/Federal Labs

- Founding partner of JILA, a pioneering collaboration between the University of Colorado and the National Institute of Standards and Technology
- Shared faculty with the Cooperative Institute for Research in Environmental Sciences and the Laboratory for Atmospheric and Space Physics
- Close research collaborations with the National Institute of Standards and Technology, the National Renewable Energy Laboratory, the National Oceanographic and Atmospheric Administration, the U.S. Geological Survey, and the National Center for Atmospheric Research
- National research centers led by physics faculty: the Liquid Crystal Materials Research Center, the Center for Extreme Ultraviolet Science and Technology, and the Colorado Center for Lunar Dust and Atmospheric Studies



Physics professor and JILA fellow **Chris Greene** won the 2010 Davission-Germer Prize for his prediction of the recently discovered long-range Rydberg molecule (pictured at left).

Outstanding Teaching

- Recognized by the College of Arts & Sciences as the college's best teaching department
- Classroom teaching innovations including clicker technology and peer learning
- Leadership in CUTeach to recruit and train tomorrow's science teachers
- Six faculty honored with national teaching awards since 2000

Service and Community Engagement

- CU Wizards, a 34-year tradition of engaging K-12 students in science
- Saturday Physics Series lectures for adults and high school students
- Award-winning Physics Education Technology Project provides online public access to interactive, research-based science simulations

Student Opportunities

- Undergraduates engage in research projects with our faculty, preparing them for graduate school and research careers
- Leading department in undergraduate research and Honors graduates

Impact Regionwide

- Our graduates have been integral to the establishment and growth of companies including Ball Aerospace, Coherent Technologies, CDM Optics, Optical Finesse, Precision Photonics, and Vescent Photonics
- Our faculty have been responsible for creating several local companies such as Displaytech, Tech-X, ColdQuanta, and K&M Labs
- Local federal laboratories and private sector companies depend on the skills and dedication of our graduates



CU-Boulder physics professors, JILA fellows, and spouses **Henry Kapteyn** and **Margaret Murnane** are world leaders in femtosecond high-intensity lasers. They have used the technology to create coherent pulsed soft x-rays with dozens of physics, chemistry, and engineering applications.



Private Gifts Help Maintain Quality

- We compete nationally for top physics students; strong CU-Boulder fellowship offers allow candidates to choose CU-Boulder for advanced degrees
- Outstanding faculty are attracted to CU-Boulder Physics because of our excellent reputation. Endowed chairs and professorships will ensure that we attract and retain talented professors and researchers

Now is the Time

- As we enhance our program's quality, the value of a CU-Boulder physics degree increases, enhancing the prestige and stature of the degrees of alumni
- Increased support will build on the legacy of excellence established by our accomplished faculty and alumni



Can students learn important physics concepts using research-based computer simulations, or help teach one another

*difficult class concepts using the peer learning method? CU-Boulder physics professor **Noah Finkelstein** in the Physics Education Research group explores these questions.*

To learn about the many ways you can make a gift:

Contact Pat Sullivan

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303-541-1475
pat.sullivan@cufund.org

www.cufund.org

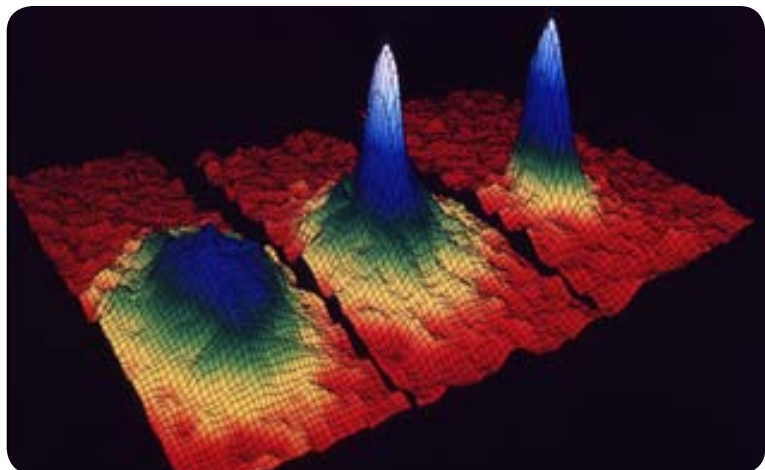
Colorado
University of Colorado at Boulder

All gifts should be payable to the CU Foundation, specifying the appropriate fund.

Supporting Excellence

- **Graduate Fellowships** to help us compete for top graduate students
- **Undergraduate Scholarships** to reward top undergraduate talent and help aspiring physicists regardless of means or circumstance
- **Endowed Chairs and Professorships** to reward and retain our outstanding faculty, honoring recipient and donor alike
- **Physics education for tomorrow** by supporting permanent funding for the CU Science Education Initiative and CUTeach, whose goals are to train the next generation of scientifically engaged citizens and to recruit and train future science and mathematics teachers

You can make a current or endowed gift or pledge, or a planned gift (such as a bequest, charitable trust or securities gift) that achieves your personal goals and estate or tax planning priorities. Or you can make a transformative capital gift that will enhance our classroom and laboratory space for future generations. CU-Boulder physics department leadership and the CU Foundation can work with you to connect your areas of interest to the department's strategic priorities.



First observation of a Bose-Einstein Condensate, Anderson, Ensher, Matthews, Wieman, Cornell, 1995.