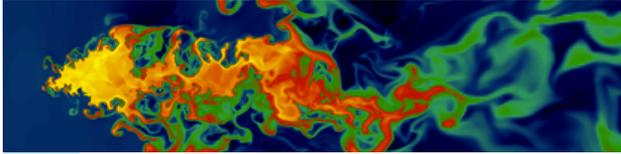


Astronomy

How does cosmic structure form?

We study planets, stellar evolution, stellar seismology, compact stellar remnants, gravity waves, neutron star emission, supernovae, gamma-ray bursters, galaxy dynamics and evolution, active galaxies and quasars, large-scale structure, cosmology, and stellar and Big Bang nucleosynthesis.



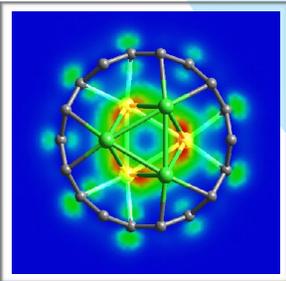
Want to build instruments? We are partners in the SOAR, SALT, and PROMPT/SkyNet telescopes, and we develop novel instrumentation for more telescopes worldwide in three laboratories.



Condensed matter

Can a sheet of atoms compute?

Our condensed matter research pursues questions in the fundamental quantum mechanics of information and correlated electron transport in nanostructures.



Technological advances are being pursued in devices using spins in atomic layered materials, energy storage in nano-particles,

light control for displays, and solar energy solutions based on molecules and nanostructures.

Nuclear & Particle Astrophysics

What is the stuff of the universe?

What are the properties of neutrinos? What is the nature of dark matter? What are the nuclear reactions that power stars? Local and international efforts are underway to understand these questions. The results will impact our understanding of fundamental symmetries and the role dark matter and neutrinos play in the cosmos.



Gravitation, Cosmology & High-Energy Physics

Is spacetime really foam?

Let your imagination go! Theoretical research in the



department spans a diverse set of intertwined subjects – string theory, quantum foam, neutrinos, fundamental

symmetries, general relativity, black holes, dark matter, dark energy, relativistic astrophysics, and cosmology.

Bio/medical physics

Can physics help us understand life?

We investigate the physics of life from the single-molecule to the bulk-tissue scale – from blood clotting to the fluid dynamics of the lung. Our imaging research develops lasers for optical coherence tomography, carbon nanotube systems for breast cancer detection, and novel human/computer interfaces and methods of computer visualization.

Life in Chapel Hill



We have an active Graduate Student Association, a full calendar of seminars, and year-round activities. Service opportunities abound with outreach programs to local schools and clubs.

Chapel Hill and neighboring Carrboro form an ideal combination of a college-town atmosphere with urban Raleigh nearby and easy access to beautiful beaches and mountains just a short drive away. Three national research universities and the Research Triangle Park have created a community with one of the highest densities of Ph.D.s in the country. With the lively arts, music and dance community, there is more to do than you can fit into your schedule!

Contact

Application: The deadline for applications is December 15th for full consideration for fellowships, but we will accept late applications until the class is full. For admission, you will need a Bachelor's degree with a minimum GPA of 3.0. We also require both the GRE General Exam and the GRE Physics Exam. The TOEFL exam is required for non-native English speakers.

Apply: <http://gradschool.unc.edu/prospective.html>

Info: <http://physics.unc.edu/>

Phone: 919-962-4703

Mail: Department of Physics and Astronomy
University of North Carolina
Phillips Hall, CB #3255
Chapel Hill, NC 27599-3255

Facilities

The Astronomy group has outstanding access to major telescopes in the southern hemisphere including the 4-meter **SOAR Telescope in Chile**, the **PROMPT** and **Skynet telescope arrays**, and the **11-meter SALT telescope in South Africa**.



Triangle Universities Nuclear Laboratory (TUNL) is the largest university-based nuclear physics lab in the nation. Our collaborations extend around the globe focusing on solar neutrinos, neutrino properties, the nuclear physics of stars, and searches for dark matter.

The **Keck Atomic Imaging and Manipulation Laboratory** features an atomic resolution transmission electron microscope. The **Chapel Hill Analytical and Nanolithography Laboratory (CHANL)** provides Class 1000/100 facilities for advanced device fabrication. Individual laboratories feature high field NMR, UHV scanning probe microscopy, molecular nanomanipulation, femtosecond lasers for microscopy, and novel nanotube X-Ray sources for imaging.

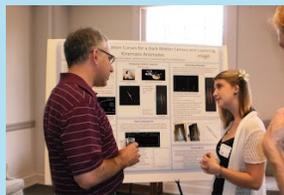
We also develop novel computational methods on massively parallel computers such as UNC's premier Killdevil facility, to address challenges in theoretical astrophysics, quantum thermodynamics, and many-body theory.



Courses & Professional Development

Graduate courses in the Department are designed to give a broad foundation and to introduce the student to areas of active research. The first year consists of foundational courses in electromagnetism, classical mechanics, quantum mechanics, and statistical mechanics. The second year features courses in advanced topics to launch students' research careers. For astronomy graduate candidates, a parallel track incorporates courses in stellar, high energy, and galactic astrophysics as well as cosmology. For biophysics students, an optional certificate program provides additional advanced courses (see www.med.unc.edu/biophysics/training). Graduate students are also trained in teaching in a one-semester seminar, both to support their integral role in the teaching mission of the department and for personal career development.

CAP REU program



Not yet a senior? Join us for the Computational Astronomy and Physics (CAP) REU program to get a taste of the exciting science and fantastic

colleagues UNC has to offer.

Every summer we host undergraduates from all over the country in our ten-week program, combining an individual research project with computational skills training and professional development.



CAP-REU website: <http://physics.unc.edu/cap>

Physics and Astronomy University of North Carolina



Join us!

Discover the earliest supernova, use nanomaterials to image cancer, measure the mass of the neutrino, or determine the structure of the web of our universe...

At the University of North Carolina at Chapel Hill Department of Physics and Astronomy, we have outstanding facilities and world renowned faculty studying frontier areas of physics and astronomy from quantum information to the physics of life to the very stuff of the universe.

You will join a group of talented graduate student colleagues in classrooms and in laboratories, all in a beautiful place to live.

We hope to see you in Chapel Hill!

