Graduate Studies in Nuclear Physics at North Carolina State University

Nuclear People
Experimental Faculty 7
Theoretical Faculty 7
Graduate Students 15

Application Target Date
January 9, each year

General university information
http://www.ncsu.edu

Departmental web site
http://www.physics.ncsu.edu/

Application site
http://www.physics.ncsu.edu/graduate/index.html

Contact in Nuclear Physics:
Dr. Chueng Ji
Chueng_ji@ncsu.edu
Phone: (919) 515-3478

About NC State, Raleigh and the Research Triangle

With more than 34,000 students and nearly 8,000 faculty and staff, North Carolina State University is a comprehensive university known for its leadership in education and research, and globally recognized for its work in science, technology, engineering and mathematics. NC State faculty generate nearly $380 million annually in research expenditures and are responsible for 750 patents and 80 start-up companies.

NC State is located in Raleigh, North Carolina, a unique place that blends the fun and excitement of a big city with the hospitality and charm of a small Southern town. Raleigh – along with Durham and Chapel Hill – anchor the three corners of the state’s Research Triangle region. In the center of the region lies Research Triangle Park, the largest research park in the world and home to industry giants like BD Technologies, Cisco, GlaxoSmithKline, IBM and Lenovo, as well as the world-renowned Research Triangle Institute.

As the state capital, Raleigh is situated in the heart of North Carolina, a short 2-3 hour drive from both the Blue Ridge Mountains and the Atlantic Ocean. With a vibrant social, sports, cultural and arts scene, multinational business and diverse recreational opportunities, plus a climate that’s mild year round, it’s easy to see why Raleigh and the surrounding region are consistently rated among the best places to live and work in the United States.

Financial Support

All graduate students in our department are supported by a teaching assistantship (TA), research assistantship (RA), or fellowships. Health insurance is provided to all students in good academic standing. Tuition is also covered for at least 5 years for those with a TA, RA, or fellowship.
The experimental nuclear group is active in studies of fundamental symmetries of neutrons and nuclei, particle astrophysics, and a variety of applied topics in nuclear structure and nuclear technology. One of the focus areas for the group is experiments which utilize ultracold neutrons, where the NCSU group plays a leading role in the neutron static electric dipole moment (nEDM) experiment; in several innovative, high precision measurements of neutron beta-decay (UCNA and the NIST lifetime experiment); and in the development of next generation ultracold neutron sources. We are also involved in neutrinoless double beta-decay and dark matter experiments, nuclear structure measurements on a wide variety of nuclei and nuclear systems, and some research directed to applications of nuclear technology for engineering and industrial problems.

Our faculty are members of the Triangle Universities Nuclear Laboratory (TUNL), a DOE Center of Excellence which offers a unique suite of low energy, polarized particle beams, the High Intensity Gamma-Ray Source, and cryogenic facilities for local experiments. On the NCSU campus, we also perform research at the PULSTAR reactor, where we are building a world-class ultracold neutron source. We plan to build a small scale version of the neutron electric dipole moment experiment, using ultra-cold neutrons from this source.

The theoretical nuclear and particle physics group at North Carolina State University investigates a broad range of topics relating to the fundamental interactions of matter. These include the study of quantum chromodynamics, the quark structure of mesons and baryons, hadronic interactions, hadronic matter under extreme conditions, nuclear structure, photonuclear reactions, heavy ion collisions, cold atomic systems, superfluidity, viscous hydrodynamics, electroweak symmetry breaking, neutrino mixing, neutrino interactions with nucleons and nuclei, stellar evolution, supernovae, nucleosynthesis, the early universe, tests of the standard model, light-front quantization, effective field theory, and non-perturbative lattice methods. We have ties with the nearby Thomas Jefferson National Accelerator, with funding opportunities from the Southeastern Universities Research Association available for qualified graduate students. Together with Duke and UNC Chapel Hill, our group co-hosts the weekly Triangle Universities Nuclear Theory (TNT) seminar series.