Real-time data acquisition code developer.
Experimental Nuclear and Astroparticle Physics Group
The University of North Carolina at Chapel Hill
and
Triangle Universities Nuclear Laboratory

The University of North Carolina at Chapel Hill Physics and Astronomy Department has an immediate opening for a Permanent Staff research scientist real-time data acquisition code developer in experimental nuclear and astroparticle physics (https://tarheels.live/enapgroup/). We are looking for a code developer that is interested in leading our data acquisition activities while acquiring new technical skills as the needs of the group evolve. The successful candidate must be capable of developing complex object-oriented data acquisition systems while contributing to related aspects including acquiring data, analyzing data, and contributing to scientific reports.

Our group currently develops and maintains a custom Objective C based Object-oriented Real-time Control and Acquisition (ORCA) (http://orca.physics.unc.edu/) application. The ORCA system is used worldwide in a number of physics experiments including LEGEND-200, the MAJORANA DEMONSTRATOR, KATRIN, HALO, and SNO+.

The group's primary research activities are searching for neutrinoless double-beta decay in ^{76}Ge as part of the LEGEND Collaboration, a direct search for neutrino mass in the KATRIN tritium beta-decay neutrino mass experiment, and involvement in the liquid scintillator R&D experiment NuDot. The UNC group is a leading contributor to the LEGEND collaboration, with major roles in detector development and characterization, electronics readout and data acquisition, and software and analysis. The UNC group is also leading the development and validation of novel machine learning methods for LEGEND simulations and analysis. We have been heavily involved in constructing, commissioning, and operating, LEGEND-200, which started physics data taking in 2023. We are likewise strongly engaged in developing LEGEND-1000, a next-generation ton-scale experiment. In KATRIN we are responsible for data acquisition, are helping guide the science program, and are exploring quantum sensor techniques to enhance KATRIN's ultimate sensitivity.

The UNC group is an integral part of the Triangle Universities Nuclear Laboratory (TUNL) (http://www.tunl.duke.edu/), a Department of Energy Office of Nuclear Physics Center of Excellence, which provides substantial technical and scientific resources related to our activities. We are also affiliated with the Institute for Cosmology, Subatomic Matter, and Symmetries (CoSMS) (https://cosms.unc.edu/) that offers a stimulating environment for discussions on a broad range of fundamental physics and astronomy topics.

This position provides the opportunity to work closely with a diverse group of graduate and undergraduate students, postdoctoral fellows, our scientific and engineering staff, as well as TUNL and CoSMS colleagues. Our group is highly invested in Diversity, Equity, and Inclusion (DEI) efforts within UNC Chapel Hill, TUNL, the LEGEND Collaboration, and APS, with faculty serving in leadership positions related to DEI within these organizations.

Chapel Hill is consistently ranked as one of the best places to live in America, where one finds a small-town culture with metropolitan amenities. The town is walkable, eclectic, safe, affordable, diverse, and green. Residents enjoy the temperate weather and the easy access to activities in the Triangle, on the coast and in the mountains.

Basic Qualifications:

- Master's Degree in Science, Technology, Engineering, or Mathematics (STEM) with real-time data acquisition software coding experience OR PhD Degree in Physics or Engineering with real-time data acquisition software coding experience.
- 3+ years of experience with object-oriented coding in Objective C, C++, and/or Python.
- 2+ years of experience with real-time data acquisition software / hardware development.
- 2+ years of experience with interfacing real-time DAQ system to databases.
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Preferred Qualifications:

- Experience with writing custom object-oriented codes for high-speed real-time data acquisition hardware and software as used in nuclear, particle, plasma, or astrophysics experiments.
- Knowledge of software development processes throughout the entire lifecycle, including use case development, requirements analysis, object-oriented analysis & design, implementation, and software verification.
- Web design experience with JavaScript/Grafana or equivalent, with near-time displays of data.
- Excellent communication skills and demonstrated ability to work collaboratively in a team environment.

To apply for this position, please follow and complete the online application at: https://unc.peopleadmin.com/postings/274173.

Applicants must arrange to have 3 recommendation letters emailed to Sarah Van Heusen (sarahvh@unc.edu) and reference Vacancy ID NF0007792.

Please contact Professor John Wilkerson (jfw@unc.edu) if you require any additional information.

The University of North Carolina at Chapel Hill is an equal opportunity and affirmative action employer. All qualified applicants will receive consideration for employment without regard to age, color, disability, gender, gender expression, gender identity, genetic information, national origin, race, religion, sex, sexual orientation, or status as a protected veteran.

If you experience any problems accessing the system or have questions about the application process, please contact the Office of Human Resources at (919) 843-2300 or send an email to employment@unc.edu. Please note: The Office of Human Resources will not be able to provide specific updates regarding position or application status.