

PREP Research Associate

This position is part of the National Institute of Standards (NIST) Professional Research Experience (PREP) program. NIST recognizes that its research staff may wish to collaborate with researchers at academic institutions on specific projects of mutual interest, thus requires that such institutions must be the recipient of a PREP award. The PREP program requires staff from a wide range of backgrounds to work on scientific research in many areas. Employees in this position will perform technical work that underpins the scientific research of the collaboration.

Research Title:

- Trapped-Ion Optical Clocks Postdoctoral Researcher

The work will entail:

We are developing optical atomic clocks based on quantum logic spectroscopy of trapped ions. Goals of this research include the development of new protocols for transferring quantum information and generating entanglement; the design and operation of world-leading optical clocks for applications in fundamental physics and metrology; and the development of ion traps, ultra-high vacuum systems and cryogenics for use in precision measurements.

Key responsibilities will include but are not limited to:

- Design, construction and operation of the optical clock apparatus including laser optics, digital and analog electronics, opto-mechanics, ultra-high vacuum systems and cryogenics.
- Design and implementation of experiments to evaluate and optimize various aspects of clock performance
- Identification and exploration of new scientific goals and opportunities for the trapped-ion system
- Evaluation of experimental data
- Communication of experimental results in the form of peer-reviewed publications and conference presentations

Qualifications

- **U.S. Citizen Preferred**
- Ph.D. in physics, electrical engineering or related field
- Prior experience with atomic physics or precision measurement experiments
- Prior experience building or operating laser systems, laboratory control electronics and ultra-high-vacuum systems
- Strong mathematics/physics skills
- Strong oral and written communication skills

Privacy Act Statement

Authority: 15 U.S.C. § 278g-1(e)(1) and (e)(3) and 15 U.S.C. § 272(b) and (c)

Purpose: The National Institute for Standards and Technology (NIST) hosts the [Professional Research Experience Program \(PREP\)](#) which is designed to provide valuable laboratory experience and financial assistance to undergraduates, post-bachelor's degree holders, graduate students, master's degree holders, postdocs, and faculty.

PREP is a 5-year cooperative agreement between NIST laboratories and participating PREP Universities to establish a collaborative research relationship between NIST and U.S. institutions of higher education in the following disciplines including (but may not be limited to) biochemistry, biological sciences, chemistry, computer science, engineering, electronics, materials science, mathematics, nanoscale science, neutron science, physical science, physics, and statistics. This collection of information is needed to facilitate administrative functions of the PREP Program.

Routine Uses: NIST will use the information collected to perform the requisite reviews of the applications to determine eligibility, and to meet programmatic requirements. Disclosure of this information is also subject to all the published routine uses as identified in the Privacy Act System of Records Notices: NIST-1: NIST Associates.

Disclosure: Furnishing this information is voluntary. When you submit the form, you are indicating your voluntary consent for NIST to use of the information you submit for the purpose stated.