



## Fundamental Physics Program

NASA's Biological and Physical Sciences Division of the Science Mission Directorate will soon solicit applications for a highly motivated individual to provide scientific leadership in pioneering scientific discovery and enabling exploration in its Fundamental Physics program, which focuses on the development of research using the space environment to advance knowledge and applications of quantum science and other fields of physics. The Program Scientist will work as part of a diverse and agile team whose core values include excellence, integrity, transparency, teamwork and a growth mindset toward stewarding the nation's space biology and physical sciences program.

### Our Mission

The NASA Fundamental Physics program identifies and develops concepts for transformative applications of the space environment to advance the boundaries of experimental physics. Since at least the early 1950's, physicists have been giving thought to experiments uniquely possible in space. Most of these experiments have used the free-falling environment of Earth-orbiting vehicles to conduct experiments under nearly gravity-free conditions, but more recently concepts have emerged that use the vacuum of space to send entangled photons over long distances.

In the primary focus of the current program, quantum phenomena with ultracold atoms, the near absence of gravity allows atom clouds to be positioned with minimal applied forces, allowing (in principle) for colder atoms, larger atomic de Broglie wavelengths, and potentially stronger, cleaner, and more scientifically interesting interactions than is possible using equivalent Earth-based atom traps. Space-based experiments also offer the possibility of longer observation times than is possible on Earth, a huge advantage in experiments involving atom interferometry, where experimental accuracy scales with the square of the observation time. The Cold Atom Laboratory aboard the International Space Station (ISS) currently supports an active research program in ultracold atomic matter. We are working closely with the German Space Agency, DLR, to develop a follow-on instrument expected to be available in 2025-26.

Other research areas in development in fundamental physics include clock-based tests of general relativity, entangled photon experiments probing the relationship between quantum mechanics and general relativity, and an active program of research in the behavior of dusty plasmas, in which NASA participates in a multinational project aboard the ISS. Future development of these research areas is likely to involve mission-specific satellites, experiments on the lunar surface, and Earth-orbiting platforms.

### For More Information

For more information, visit:

[nasa.gov/sites/default/files/atoms/files/np-2015-04-021-jsc\\_fundamental\\_physics-iss-mini-book-508.pdf](https://nasa.gov/sites/default/files/atoms/files/np-2015-04-021-jsc_fundamental_physics-iss-mini-book-508.pdf)

### About the Position

The Fundamental Physics Program Scientist provides expert scientific leadership for the formulation and execution of all aspects of the Fundamental Physics program and represents this program to external organizations. Responsibilities include:

- Maintaining the scientific integrity of the program.
- Working with the Physical Sciences Program Manager to establish and set the organizational strategic direction, goals, priorities, structure, processes and culture for Fundamental Physics.
- Leading the development and maintenance of research and technology plan(s).
- Leading the formulation and execution of solicitations for research and technology development in fulfillment of the program's plans and making selection recommendations.
- Monitoring progress of the research and technology development portfolio.
- Providing authoritative and comprehensive advice, assistance and oversight to NASA Centers and program and project offices to ensure the program is implemented at the NASA Centers in an integrated manner.
- Advocating for Fundamental Physics science and developing collaborations with external organizations. Participating in domestic and international scientific conferences and symposia as the senior program science representative.

### Position Location

The duty station will be determined upon selection and will be at one of the following locations: NASA Headquarters (Washington, DC) - preferred; Glenn Research Center (Cleveland, Ohio); or Marshall Space Flight Center (Huntsville, Alabama).

## Application Process

The job announcement will open for applications at [USAJOBS.gov](https://USAJOBS.gov) on Friday May 7 and will close on Tuesday May 11.

This is a fair and open competition that all U.S. Citizens and [Status Candidates](#) can apply to.

This will be a Direct Hire Authority (DHA) announcement through [USAJOBS.gov](https://USAJOBS.gov), so it will only be open for 3 workdays. The short period that the announcement is open is due to the type of hiring authority, which streamlines the hiring process and assists with rapidly filling competitive positions. It is not a reflection of the openness of the position. Advance notice of the vacancy is being provided to allow interested scientists to prepare. In order to apply for this position, you will only need to (i) submit your resume and a transcript and (ii) answer the screening questions and supplemental information through USAJOBS.

Given the short period the announcement will be open, it is a good idea to log into USAJOBS before the job announcement opens and update your username, password, resume, etc., to facilitate the timely submission of an application.

A transcript demonstrating that you meet the education requirements for a Federal physical scientist will be required at the time of application. Given the short period that the announcement will be open, it is a good idea to obtain a transcript in advance. While a transcript is the preferred proof of qualifying education, any of the following items will be accepted as proof of education:

- An unofficial transcript,
- A copy of an official transcript,
- A copy of a degree (i.e. a picture or scan), or
- A list of courses.

Candidates interested in being notified when this job opportunity is posted on [USAJOBS](https://USAJOBS.gov) and opened for three days are encouraged to sign up for a notification using the features of the [USAJOBS website](https://USAJOBS.gov).

## Further Information

Candidates interested in this opportunity are encouraged to contact NASA well in advance so they can make a well-informed decision on submitting an application during the very short (3 day) window when the job opportunity will be open for applications. Questions about this anticipated opening for a Quantum Program Scientist at NASA Headquarters may be directed to Brad Carpenter, Fundamental Physics Program Scientist, Space Biology and Physical Sciences Division, [bcarpenter@nasa.gov](mailto:bcarpenter@nasa.gov).