

Opportunity Title: Gravitational Physics in Space: Theory and Experiment

Opportunity Reference Code: 0016-NPP-MAR26-JPL-Astrophys

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0016-NPP-MAR26-JPL-Astrophys

How to Apply All applications must be submitted in [Zintellect](#)

Please visit the NASA Postdoctoral Program website for application instructions and requirements: [How to Apply | NASA Postdoctoral Program \(orau.org\)](#).

A complete application to the NASA Postdoctoral Program includes:

1. Research proposal
2. Three letters of recommendation
3. Official doctoral transcript documents

Application Deadline 3/1/2026 6:00:59 PM Eastern Time Zone

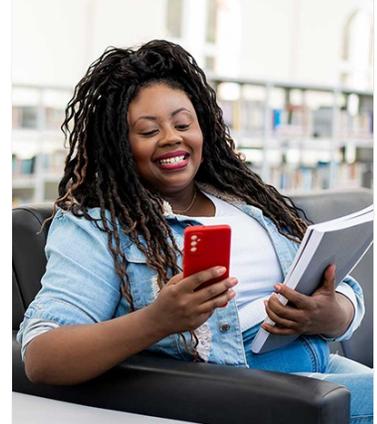
Description About the [NASA Postdoctoral Program](#)

The [NASA Postdoctoral Program \(NPP\)](#) offers unique research opportunities to highly-talented scientists to engage in ongoing NASA research projects at a NASA Center, NASA Headquarters, or at a NASA-affiliated research institute. These one- to three-year fellowships are competitive and are designed to advance NASA's missions in space science, Earth science, aeronautics, space operations, exploration systems, and astrobiology.

Description:

Our research program is dedicated to advancing the frontiers of gravitational physics, relativistic astrophysics, and precision navigation technologies, with a strategic emphasis on enabling transformative scientific discoveries and mission capabilities. Core research areas include:

1. Gravitational and Fundamental Physics: Developing theoretical and experimental frameworks to test general relativity, alternative theories of gravity, and fundamental physical laws through high-precision measurements and advanced modeling in relativistic celestial mechanics, astrophysics, and cosmology.
2. High-Precision Spacecraft Navigation: Advancing models of relativistic gravitational and non-gravitational forces, solar system dynamics, and state-of-the-art algorithms for spacecraft trajectory prediction, state reconstruction, and deep-space mission navigation.
3. Optical Astrometry and Laser Metrology: Pioneering high-precision astrometry techniques and laser-based metrology systems to achieve unprecedented accuracy in ranging, tracking, and observational platforms for both near-Earth and deep-space applications.
4. High-Power Laser Technologies: Developing coherent beam combination, high-power laser ranging, and power transmission systems to support advanced sensing, communication, and propulsion solutions for space missions.



Whether you are just starting your career or already at a senior level, ORAU offers internships, fellowships, research opportunities, and contract positions that can provide you with invaluable experience. Download the ORAU Pathfinder mobile app and find the right opportunity to propel you along your career path!

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5. Detection and Characterization of Near-Earth and Interstellar Objects (NEOs and ISOs): Innovating optical sensor designs and synthetic tracking methodologies to identify, track, and characterize faint, fast-moving objects, enabling proactive planetary defense and interstellar science.
6. Solar Gravitational Lens (SGL) Exploration: Designing mission architectures and technological frameworks for direct, high-resolution imaging and spectroscopy of exoplanets using the solar gravitational lens, providing unprecedented observational capabilities for distant planetary systems.
7. Solar Sailing and High-Velocity Propulsion: Investigating advanced solar sailing concepts for achieving high-speed transit velocities, with applications for interplanetary and interstellar exploration, emphasizing scalable, low-mass propulsion solutions.
8. Gravitational Microlensing and Astrophysical Observations: Exploiting gravitational microlensing to study planetary and astrophysical systems, enhancing our understanding of the distribution and properties of distant celestial objects.
9. High-Precision Science with GNSS: Leveraging Global Navigation Satellite Systems (GNSS) for advanced scientific applications, including time transfer, Earth observation, and spacecraft tracking with sub-centimeter accuracy.

These efforts are designed to address critical challenges in space exploration, providing solutions that bridge fundamental science and mission technology. Our work supports the long-term vision of advancing humanity's reach into the cosmos, transforming our understanding of the universe, and enabling next-generation space missions.

Location:

Jet Propulsion Laboratory
Pasadena, California

Field of Science: Astrophysics

Advisors:

Slava G. Turyshev
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818-393-2600

Applications with citizens from Designated Countries will not be accepted at this time, unless they are Legal Permanent Residents of the United States. A complete list of Designated Countries can be found at: <https://www.nasa.gov/oiiir/export-control>.

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Eligibility is currently open to:

- U.S. Citizens;
- U.S. Lawful Permanent Residents (LPR);
- Foreign Nationals eligible for an Exchange Visitor J-1 visa status; and,
- Applicants for LPR, asylees, or refugees in the U.S. at the time of application with 1) a valid EAD card and 2) I-485 or I-589 forms in pending status

Questions about this opportunity? Please email npp@orau.org

Point of Contact [Mikeala](#)

Eligibility Requirements • **Degree:** Doctoral Degree.