Opportunity Title: Characterization of exoplanets via direct-imaging spectroscopy
Opportunity Reference Code: 0272-NPP-MAR26-JPL-Astrophys

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0272-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:

To characterize the atmosphere, climate, and potential habitability of small rocky exoplanets with spectroscopy is a significant endeavor that underpins the exploration of the universe. While the small exoplanets that orbit M dwarf stars may be within the reach of the JWST, to characterize the small exoplanets that orbit Sun-like stars will require direct imaging from space. Within the next decade, it is expected that the Nancy Grace Roman Space Telescope will demonstrate the coronagraph technology in space, as one of the technologies to suppress the starlight and enable direct imaging of planets in orbit. Envisioning a large space telescope that couples with starlight suppression technologies to find small exoplanets in the habitable zones of nearby stars and study their atmospheres, the Astro2020 decadal survey recommends development toward a potential flagship mission to search for Earth-like habitable exoplanets through direct imaging.

To anticipate the types of planets that will be discovered by future direct-imaging space missions and develop the methods to characterize them, a multidisciplinary approach that combines astrophysics, planetary science, and statistics is required. The overarching science questions include: how to distinguish a rocky planet from a volatile rich one, when they have similar radii? How to determine whether the rocky planet has a liquid-water ocean? How to distinguish an Earth-like planet from a Venus-like one? And for volatile-rich planets, what can we learn about them to better understand the

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evolution of planets and their atmospheres? The postdoc fellow will combine numerical simulations, Bayesian retrievals, as well as experiences of solar-system exploration to address some of these broadly defined questions. The fellow will also apply what we learn about the exoplanet formation and evolution through current observations to simulate the planets to be discovered and characterized by future direct-imaging missions.

Field of Science: Astrophysics

Advisors:

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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/oiir/export-control.

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.