

Opportunity Title: Keck Observatory as a Testbed for Optimally Phasing Habitable Worlds Observatory
Opportunity Reference Code: 0343-NPP-NOV26-GSFC-TechDev

Organization National Aeronautics and Space Administration (NASA)

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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 11/1/2026 6:00:59 PM Eastern Time Zone

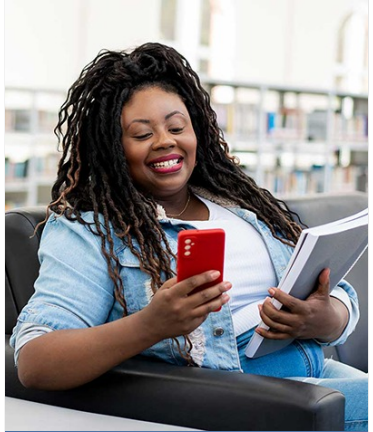
Description About the [NASA Postdoctoral Program](#)

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:

Habitable Worlds Observatory (HWO) will be NASA's next flagship mission. It is designed to not only perform transformative astrophysics, but it will also be the first mission ever designed to detect and characterize Earth-like planets orbiting Sun-like stars. This ambitious science case brings two extreme challenges: suppressing the starlight by a factor of 10 billion and having a stable observatory to the ~10s of picometer level over a wavefront control cycle. Several architectures are currently under consideration, but all are segmented and require maintaining precisely co-phased primary mirror segments in rigid body degrees of freedom. Maintaining phase at extreme levels requires nested control loops that include fed by deformable mirrors, the primary mirror actuators, laser metrology, edge sensors, and a low-order wavefront sensor.

Keck Observatory remarkably has a similar wavefront control architecture to that proposed for HWO, and unlike high-contrast imaging testbeds, has realistic segments that can help us understand how to optimally phase the telescope in the presence of real segment deformation. Areas of study include: incorporating segment fabrication, warping, and support errors (including high- and mid-spatial frequency figure errors) into optical models and assessing their impact on high-contrast and high-resolution adaptive



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optics systems; understanding wavefront control interactions in these dual-mirror, high-order adaptive optics systems; and understanding the optimal phasing solution for HWO to maximize Strehl and contrast levels.

The applicant would be part of the team located at Goddard Space Flight Center, but will work in close collaboration with colleagues at UCSC, JPL, and Keck Observatory.

Field of Science: Technology Development

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/oiiir/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

Qualifications The candidate should have an advanced degree in an applicable field (e.g., physics, astronomy, optics, etc.) and should have experience with data analysis, reduction, and observing.

Point of Contact [Mikeala](#)

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