Opportunity Title: High Contrast Astronomical Imaging and Interferometry
Opportunity Reference Code: 0027-NPP-NOV23-JPL-Astrophys

Organization
National Aeronautics and Space Administration (NASA)

Reference Code
0027-NPP-NOV23-JPL-Astrophys

Application Deadline
11/1/2023 6:00:59 PM Eastern Time Zone

Description
The number of known planets around nearby stars continues to increase. The primary goal of this research is the direct detection of the faint emission from such exoplanets and from exozodiacal/debris disks. New high-contrast near-neighbor detection techniques are emerging regularly, and we are working to test and use these approaches at the Palomar Observatory. We now have two facilities available on the Hale 200-inch telescope. The first is an off-axis subaperture on the Hale telescope that is corrected to extreme adaptive optics levels, which allows for testing and observation with a variety of coronagraphs. The second facility is a rotating multi-aperture nuller on the Hale telescope that seeks to demonstrate the complete companion detection strategy envisioned for a rotating space-based nulling interferometer. Interestingly, this interferometer, with an inner working angle as small as 30 milli-arcseconds, may provide a small-angle detection capability superior to that of any coronagraph. Technical work in either or both of these areas is envisioned, as is the observational search for faint companions such as brown dwarfs and hot young planets around nearby stars. Eventually the work should lead to deployment on larger telescopes and in space.

References:

Haguenauer, P. & Serabyn, E. “Deep Nulling of Laser Light with a Single-Mode Fiber Beam Combiner,” 2006, Appl. Opt., 45, 2749

Serabyn, E., Wallace, J. K., Troy, M., Mennesson, B., Haguenauer, P., Gappinger, R. O. & Bloemhof, E. E. “Extreme Adaptive Optics using an Off-Axis Subaperture on a Ground-Based Telescope,” 2006, Proc. SPIE 6272, 62722W

Location:
Jet Propulsion Laboratory
Pasadena, California

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

Eligibility Requirements

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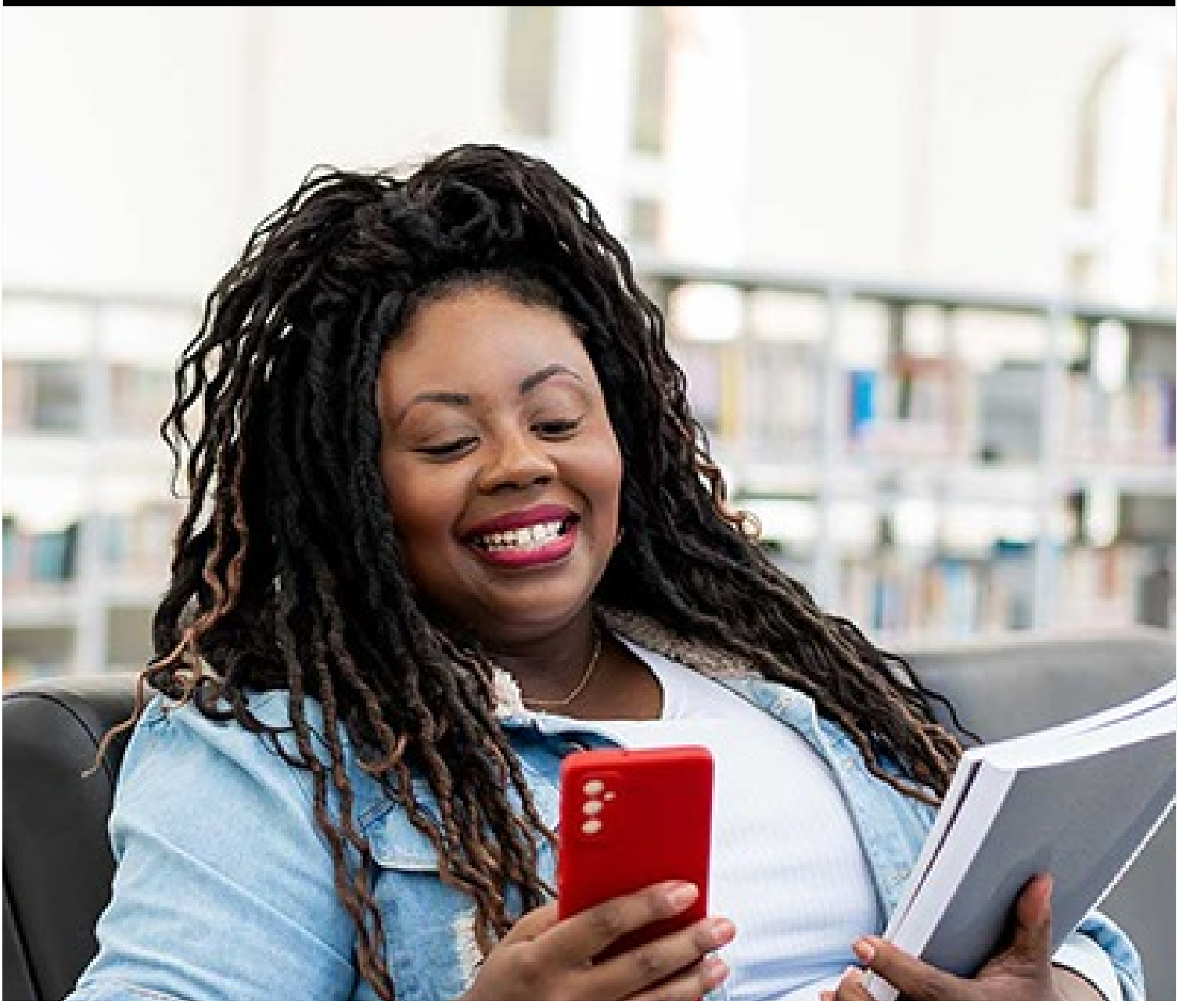
- **Degree:** Doctoral Degree.

NPP NASA Postdoctoral Program

ORAU Pathfinder



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