

Opportunity Title: Visible Light Adaptive Optics for Extreme precision radial velocity measurements of Exoplanets

Opportunity Reference Code: 0225-NPP-NOV23-JPL-Astrophys

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0225-NPP-NOV23-JPL-Astrophys

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

Description The extreme precision radial velocity (EPRV) technique holds the promise of discovering terrestrial planets orbiting solar type stars. Most plans for EPRV measurements have assumed the use of seeing limited spectrographs using multi-mode fibers, but adaptive optics (AO) can feed single mode fibers, which would produce compact spectrographs that would be more stable. For this and a number of other reasons, AO fed spectrographs promise to have smaller RV measurement errors. The vast majority of AO systems have been developed in the near-infrared, but EPRV studies will most likely be done in the visible.

We welcome applicants interested in understanding the impact of AO on EPRV measurements, particularly those aspects of the EPRV error budget that change when an AO system is used in conjunction with a diffraction-limited spectrometer. In addition, applicants interested in modeling visible light AO performance are encouraged to apply. Other possible areas on research are determining ways to improve the fiber coupling efficiency in single and multi-mode fibers, such as improved coupling optics, methods for maintaining fiber alignment, or for correcting non-common path aberrations in the fiber arm of the AO system. In addition the applicant will have the opportunity to work with a diffraction limited spectrograph for RV measurements at Palomar in the Near-IR and the other AO instruments at Palomar.

Location:

Jet Propulsion Laboratory
Pasadena, California

Field of Science:Astrophysics

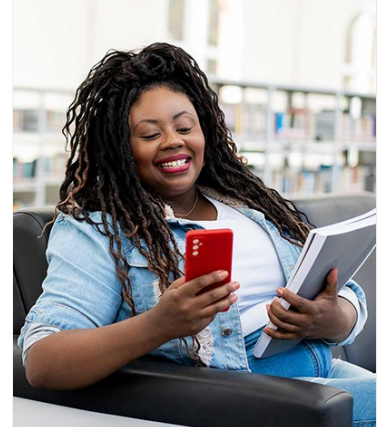
Advisors:

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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,



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- 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

- **Degree:** Doctoral Degree.