

Opportunity Title: High Contrast Coronagraphy

Opportunity Reference Code: 0049-NPP-NOV23-JPL-HelioSci

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0049-NPP-NOV23-JPL-HelioSci

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

Description The research topic is ultra high-contrast coronagraphy for space and ground applications. At JPL we have demonstrated better than 10^9 contrast near the image of an artificial star in the High Contrast Imaging Testbed (HCIT). Wavefront control using wavefront sensors and deformable mirrors (DMs) is the critical technology that must be advanced so that Terrestrial Planet Finder Coronagraph levels of 10^{10} contrast are to be achieved. This calls for the use of multiple DMs in broadband light. The solution will likely require novel hybrid approaches in which the system is designed to utilize the DMs for diffraction control as well as scattered light control. The work also involves the development and modeling of ground-based coronagraph instruments. The successful candidate should have strong analysis and modeling skills.

Recent Refereed Publications:

S. Shaklan and J. Green, "Reflectivity and optical surface height requirements in a broadband coronagraph. 1. Contrast floor due to controllable spatial frequencies," *Appl. Opt.*, vol. 45, 5143-5153 (2006).

A. Give'on, R. Belikov, S. Shaklan, and J. Kasdin, "Closed loop, DM diversity-based, wavefront correction algorithm for high contrast imaging systems," *Opt. Express* vol. 15, 12338-12343 (2007)

Location:

Jet Propulsion Laboratory
Pasadena, California

Field of Science:Heliophysics Science

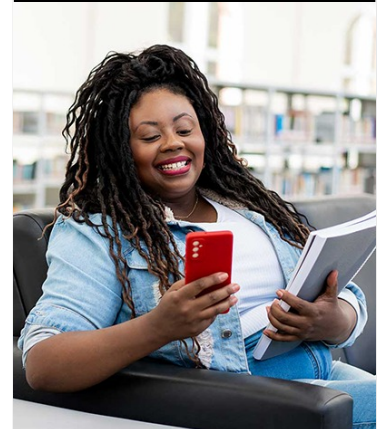
Advisors:

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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



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application with 1) a valid EAD card and 2) I-485 or I-589 forms in pending status

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