

Opportunity Title: Benchmark of exoplanet characterization

Opportunity Reference Code: 0203-NPP-MAR23-JPL-PlanetSci

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0203-NPP-MAR23-JPL-PlanetSci

Application Deadline 3/1/2023 6:00:00 PM Eastern Time Zone

Description The postdoctoral fellow will derive benchmarks of characterizing exoplanets using observations of solar system bodies along with numerical simulations. Solar system bodies provide the ground truth for positive/negative biosignatures in planetary systems. The research will use solar system bodies as proxies to analyze the detectability and observation limit for biosignatures on exoplanets. Full-disk observations of Earth by Deep Space Climate Observatory (DSCOVR), and other planets, Venus by Akatsuki and Jupiter by Cassini etc., will be used for planetary light curve analysis, along with Global Climate Model (GCM) as well as radiative transfer models of exoplanets. The goal is to develop applicable methodologies for deducing planetary properties of distant potentially habitable worlds. The outcomes expect to include an improved astrophysical characterization approach of exoplanet, a framework of assessing the detectability of potential biosignatures, and a technique of determining information content from exoplanet time series. The research may also be over this range.

Jiang, J. H., et al. Using Deep Space Climate Observatory Measurements to Study the Earth as an Exoplanet. The Astronomical Journal. 156 (1), 26 (2018).

Fan, S., et al. Earth as an Exoplanet: A Two-dimensional Alien Map. The Astrophysical Journal Letters. 882 (1), L1 (2019).

Location:

Jet Propulsion Laboratory
Pasadena, California

Field of Science: Planetary 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;



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- 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

- **Degree:** Doctoral Degree.