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Opportunity Title: Developing a physically-motivated picture of stellar activity at rotational timescales for EPRV studies
Opportunity Reference Code: 0268-NPP-NOV26-JPL-Astrophys

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0268-NPP-NOV26-JPL-Astrophys

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:

Our group uses high resolution ground-based spectrographs to discover planets around nearby stars via the Doppler radial velocity (RV) 'wobble' technique. Detection of Earth-like planets in the habitable-zones of nearby stars is a top priority in the astronomical community. However, the detection and characterization of these planets from ground-based observatories remains beyond the reach of current exoplanet-hunting instruments and surveys. A key goal in exoplanet science for the next decade is to improve our understanding of stellar activity, which can masquerade as planetary signals in stellar RV time series. If uncorrected, these activity signals can dwarf the minute planetary Doppler reflex motion induced by Earth-like planets by factors of 10 or more. We aim to use high resolution, high precision spectroscopic data of bright, active stars to determine how best to identify and separate these signals from the true Keplerian reflex motion induced by orbiting planets. We aim to paint a more comprehensive, chromatic picture of stellar activity, focusing on building a sample of well-characterized active stars (high RV jitter) that are amenable to ultra-high signal-to-noise (SNR) measurements with the Keck Planet Finder (KPF), PARVI, and NEID precision radial velocity facilities. These stars will allow for a deep exploration of the different manifestations of specific activity phenomena at the line-by-line level, and will illuminate a path towards activity characterization and mitigation in more 'quiet' RV targets that are

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likely to be observed in future EPRV surveys.

The successful applicant(s) will work closely with a team of field-leading exoplanet detection experts to analyze high resolution spectroscopic data from these EPRV facilities to isolate and model the effects of granulation, stellar pulsations, and rotationally-modulated signals (e.g. spots, plages) at the spectral level. The research will focus on leveraging a library of high-resolution spectra of active stars spanning a wide range of effective temperatures to derive and test different spectroscopic measurement metrics and techniques aimed at identifying stellar activity signals in radial velocity time series. The eventual goal will be to apply these techniques to other spectroscopic data sets of nearby stars to improve detection sensitivity to smaller planets. This activity is crucial as a precursor science goal for the Habitable Worlds Observatory, which will require a well-vetted list of EPRV-detected exo-Earth planets.

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

Questions about this opportunity? Please email npp@orau.org

Point of Contact Mikeala

Eligibility Requirements

- **Degree:** Doctoral Degree.