

Opportunity Title: Subsystems development for the Astrophysics Stratospheric Telescope for High Spectral Resolution Observations at Submillimeter-wavelengths

Opportunity Reference Code: 0197-NPP-NOV26-JPL-Astrophys

Organization National Aeronautics and Space Administration (NASA)

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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

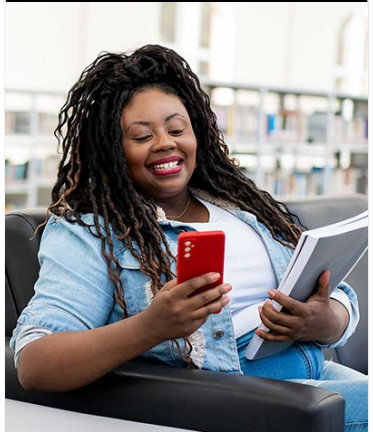
Application Deadline 11/1/2026 6:00:59 PM Eastern Time Zone

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:

The Astrophysics Stratospheric Telescope for High Spectral Resolution Observations at Submillimeter-wavelengths, ASTHROS, is a 2.5-m balloon-borne observatory featuring cryogenic superconducting heterodyne array spectrometers that will make the first detailed spectrally resolved high spatial resolution 3D map of ionized gas in Galactic and extra-galactic star forming regions via simultaneous observations of the 2.46 THz 1.46 THz fine structure lines of ionized nitrogen. A 21-day Antarctic flight in 2023 will focus on mapping Galactic and extragalactic star forming regions. ASTHROS goal is to understand how different stellar feedback mechanisms affect ionized gas over a wide range of spatial scales in the Milky Way and other galaxies. We are seeking postdoctoral researchers to assist in all phases of the design, fabrication, I&T and flight preparation of the different components and systems of the ASTHROS terahertz radio-telescope. In particular, candidates who can work well in a very dynamic team of scientists and engineers, under a tight schedule, and with experience/interested in one or more of the following areas: (i) RF control electronics & software (instrument computers and software, data transmission protocols), FPGAs, DC-DC converters, etc) to develop custom compact Command & Data Handling (C&DH) systems tailored to terahertz systems able to power and control the different subsystems, analog and digital, as well as acquiring both science and housekeeping data. The



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system should also be able to interact with standard data transmission protocols; (ii) Integration and laboratory characterization of high-frequency (terahertz) components and subsystems such local oscillators (frequency multiplied Schottky diode based sources) and mixers (cryogenically-cooled Hot Electron Bolometer mixers), (iii) I&T of submillimeter-wave/terahertz instruments and/or balloon-borne instruments/telescopes; (iv) mechanical and thermal design knowledge

References:

[1] J. V. Siles, ""Exploring the Universe: From Antarctica to the Stars"", as part of the JPL Von Karman Lecture Series ""The World of Scientific Balloons"", Feb. 2019. Available online at: <https://youtu.be/18zr9sMuhIk> and aired on NASA TV. [2] T. Phillips et al., Submillimeter astronomy (heterodyne spectroscopy), Proc. of the IEEE, Nov. 1992. [3] P.H. Siegel, ""THz Technology,"" IEEE Trans. Microwave Theory and Techniques 50th Anniversary Issue, vol. 50, no. 3, pp. 910-928, March 2002. Special Invited paper. [4] Jose V. Siles, et al., ""A New Generation of Room-Temperature Broadband Frequency Multiplied LO Sources with 10 times Higher Output Power in the 160 GHz - 1.6 THz Range"", IEEE Transactions on Space Terahertz Technology, in press, November 2018.

Location:

Jet Propulsion Laboratory
Pasadena, California

Field of Science: Astrophysics

Advisors:

Jose V. Siles
Jose.V.Siles@jpl.nasa.gov
818-354-4006

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

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Point of Contact [Mikeala](#)

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