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Opportunity Title: Advanced Technology Development and Infusion for UV Missions
Opportunity Reference Code: 0179-NPP-NOV24-JPL-Astrophys

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0179-NPP-NOV24-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 11/1/2024 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 U.S. and non-U.S. 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:

Exciting technologies have been/are being developed that could have high impact in performance of instruments and potentially be mission enabling. High efficiency detectors for example can make it possible to perform scientific investigations in small satellites and CubeSats. We are working on demonstrating detectors and other UV instrument technologies in platforms with efficient access to space. SPARCS (Star Planet Activity Research CubeSat) is a recently funded mission that plans to use high efficiency solid-state ultraviolet detectors in the far ultraviolet and near ultraviolet in order to study the M dwarf stars UV radiation on time-scales from minutes to weeks. The UV environment of a planet in the habitable zone is critical to study. For example, the planet's UV environment affects the habitability potential of the planet. SPARCS camera, SPARCam will use the latest in silicon ultraviolet detection technology. The delta doped detectors will have higher efficiency than the state of the art UV detectors and will have unprecedented out of band rejection enabled by integrating metal dielectric filters in the device structure. Successful candidate will work with the team on detector and coatings technology development and will lead the integration of these technologies in the CubeSat opportunity. Will work in a team environment and will contribute to team's instrument development and deployment based on enabling technologies. Will publish results in technical refereed journals and present results in technical conferences.

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References:

John Hennessy, April D. Jewell, Michael E. Hoenk, and Shouleh Nikzad "Metal-dielectric filters for solar-blind silicon ultraviolet detectors,". Applied Optics 54 pp. 3507-3512 (2015).

John Hennessy, April D. Jewell, Kunjithapatham Balasubramanian, and Shouleh Nikzad, "Ultraviolet optical properties of aluminum fluoride thin films deposited by atomic layer deposition," Journal of vacuum science and technology- A (JVSTA), 34, (2016).

Nikzad, S.; Hoenk, M. E.; Jewell, A. D.; Hennessy, J. J.; Carver, A. G.; Jones, T. J.; Goodsall, T. M.; Hamden, E. T.; Suvarna, P.; Bulmer, J.; Shahedipour-Sandvik, F.; Charbon, E.; Padmanabhan, P.; Hancock, B.; Bell, L. D. Single Photon Counting UV Solar-Blind Detectors Using Silicon and III-Nitride Materials. Sensors 2016, 16, 927.

Nikzad, S., et al., (2016), "High Efficiency UV/Optical/NIR Detectors for Large Aperture Telescopes and UV Explorer Missions: Development of and Field Observations with Delta-doped Arrays," arXiv:1612.04734 [astro-ph.IM].

S. Nikzad, A. D. Jewell, M.E. Hoenk, T.J. Jones, J. Hennessy, Tim Goodsall, Alexander G. Carver, Charles Shapiro, Samuel R. Cheng, Erika T. Hamden, G. Kyne, D.C. Martin, D. Schiminovich, P. Scowen, K. France, S. McCandliss, R.E. Lupu, ""High-efficiency UV/optical/NIR detectors for large aperture telescopes and UV explorer missions: development of and field observations with delta-doped arrays,"" J. Astron. Telesc. Instrum. Syst.3(3), 036002 (2017), doi: 10.1117/1.JATIS.3.3.036002.

"Enhanced atomic layer etching of native aluminum oxide for ultraviolet optical applications," J. Hennessy, C. Moore, K. Balasubramanian and A.D. Jewell, Kevin France, Shouleh Nikzad, Journal of Vacuum Science & Technology A: Vacuum, Surfaces, and Films 35, 041512 (2017); doi: http://dx.doi.org/10.1116/1.4986945

Location:
Jet Propulsion Laboratory
Pasadena, California

Field of Science: Astrophysics

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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

Eligibility Requirements

- **Degree:** Doctoral Degree.