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**Opportunity Title:** Modern Techniques for Neutron and Gamma-ray Spectrometry and Imaging
**Opportunity Reference Code:** 0306-NPP-MAR25-GSFC-Heliophys

**Organization** National Aeronautics and Space Administration (NASA)

**Reference Code** 0306-NPP-MAR25-GSFC-Heliophys

**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** 3/1/2025 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:**

The Energetic Particle Lab (EPL) in the Heliophysics Science Division is currently building instruments to measure charged and neutral particles. Instrumentation is based on solid state detectors and modern scintillators readout with silicon photomultipliers (SiPM). Opportunities exist to establish a research area modernizing neutron and gamma-ray spectrometers. These instruments are vital for Heliophysics, Planetary, and Astrophysics and often are highly interdisciplinary. There are also commercial opportunities for such spectrometers with a high potential for technology transfer. A particular emphasis is on developing spectrometers for the Artemis program both to conduct trailblazing science while safeguarding astronauts against radiation exposure during deep space travel and lunar surface expeditions. The current emphasis is to reduce the power, mass, and volume of well-established neutron/gamma-ray instrumentation and to expand the readout to more robust systems including rad-hard SiPMs and novel multi-channel ASICs. We are also exploring modern scintillators and solid-state options for detecting neutrons from thermal, to epi-thermal, to fast neutrons -- covering the entire range of neutron energies. We are also interested in simulating the response and environment that is applicable for such instrumentation.

**Field of Science:** Heliophysics Science

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**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

**Qualifications** The applicant should have a graduate degree (preferably PhD) in either physics or engineering. Key skills include computer programming, modern laboratory technique for experimental physics, and excellent communication skills. Laboratory techniques should include experience with instrument development and testing, a cursory knowledge of engineering, and a strong background in physics.

**Point of Contact** Mikeala Lambertucci

**Eligibility Requirements**

- **Degree:** Doctoral Degree.