

Opportunity Title: Solid-State Gamma-ray Instrument Development for Future
Astroparticle Missions

Opportunity Reference Code: 0221-NPP-NOV23-GSFC-Astrophys

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0221-NPP-NOV23-GSFC-Astrophys

Application Deadline 11/1/2023 6:00:59 PM Eastern Time Zone

Description High-energy gamma-ray astronomy focuses on the study of cosmic explosions, cosmic accelerators and fundamental physics. The next leap in our understanding of the extreme universe will come through observations in the energy band spanning keV to GeV. The Astroparticle physics lab at Goddard is currently developing and building next generation gamma-ray experiments and missions, on a range of scales and platforms. The next advances in these missions will be enabled through the simulation and development of radiation-hard, low-power solid state detectors, such as silicon photomultipliers (SiPMs), silicon pixel detectors, and silicon strip detectors. The team at Goddard offers opportunities to pursue topics relevant to the development of these types of detectors, including low level detector design and characterization, read-out electronics development (both analog and digital), software development (including simulations and firmware), and instrument design.

Our group has access to existing facilities and equipment needed to carry out the proposed research. These include but are not limited to electronics development and testing laboratories, detector development and testing facilities, computing and software development facilities, fabrication facilities, radioactive sources for testing, on-site machine shops, and readout electronics for testing preliminary engineering models of the instrument. The hardware developed in this opportunity is specifically focussed on the astrophysics studies enabled by future medium or high energy gamma-ray missions such as AMEGO, and is also applicable to several upcoming Heliophysics opportunities including Lunar Gateway and the PRISM opportunity.

Location:

Goddard Space Flight Center
Greenbelt, Maryland

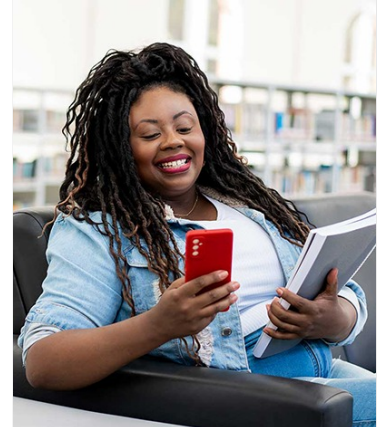
Field of Science: Astrophysics

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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/oiiir/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

Eligibility Requirements

- **Degree:** Doctoral Degree.