

Opportunity Title: Astrophysics: Far-Infrared, Submillimeter, and Millimeter-wave Instruments for Astronomy

Opportunity Reference Code: 0097-NPP-NOV23-GSFC-Astrophys

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0097-NPP-NOV23-GSFC-Astrophys

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

Description This work focuses on ultrasensitive detector design, fabrication, characterization, and integration into instruments for ground-based, airborne, and space-based astrophysical investigations. Current research focuses primarily on the development of large-format arrays of sensitive bolometers using superconducting transition edge sensors. We also have investigated single pixel optimization, including operation at very low powers for ultrasensitive ($NEP \sim 10^{-19} \text{ W/Hz}^{0.5}$), novel noise suppression methods, and polarization sensitivity. Recent efforts include the development of hot electron bolometers, microwave kinetic inductance detectors, and novel microstrip spectrometers.

As a key portion of our detector development activities, our group is heavily involved in deploying instruments for suborbital observations. Instruments currently under development include the balloon-borne projects PIPER (Primordial Inflation Polarization Explorer), a 0.5-2mm wavelength camera for CMB polarimetry and EXCLAIM (EXperiment for Cryogenic Large-Aperture Intensity Mapping), a submillimeter intensity mapping experiment operating from 0.5-0.7mm. We also build instruments based on these detectors for ground-based observatories, including the GISMO-2 dual-band (1.15 and 2mm wavelength) camera for the 30m Millimeter Radio Telescope. Finally, technology development for large format bolometer arrays and for MKID-based instruments for mid- and far-infrared imaging and spectroscopy are being intensively pursued and offer unique opportunities for postdoctoral research.

Location:

Goddard Space Flight Center
Greenbelt, Maryland

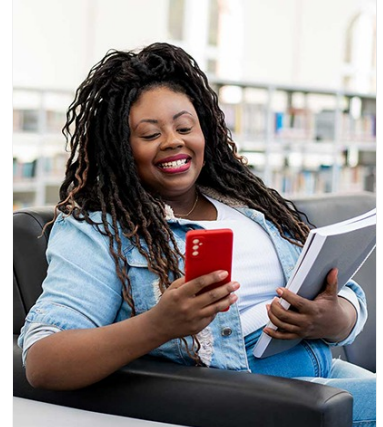
Field of Science: Astrophysics

Advisors:

Thomas M Essinger-Hileman
thomas.m.essinger-hileman@nasa.gov
301.286.3693

Jason Glenn
jason.glenn@nasa.gov
301-286-4591

Matthew A. Greenhouse
matt.greenhouse@nasa.gov
301-286-4517



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Alan J. Kogut
Alan.J.Kogut@nasa.gov
301-286-0853

Erin C. Smith
erin.c.smith@nasa.gov
301-286-7793

Eric Switzer
Eric.R.Switzer@nasa.gov
301-614-0921

Edward J. Wollack
Edward.J.Wollack@nasa.gov
301.286.1379

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/oior/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.