

Opportunity Title: High-Sensitivity Far-IR Detectors

Opportunity Reference Code: 0163-NPP-MAR23-JPL-Astrophys

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0163-NPP-MAR23-JPL-Astrophys

Application Deadline 3/1/2023 6:00:00 PM Eastern Time Zone

Description We are seeking one or more postdoctoral researchers with hands-on experience in low-temperature superconducting devices and far-IR to millimeter-wave instrumentation to join our team developing the world's most sensitive far-infrared detectors. We are pursuing detector arrays in which each pixel provides background-limited performance in a dispersive spectrometer on a cryogenic space telescopes; that is a per-pixel noise equivalent power of 10^{-19} W/sqrt(Hz) or lower. The researcher(s) will make use of a dilution-cooled sub-100mK cryostat to characterize devices built in the JPL micro devices lab (MDL). We are pursuing transition-edge-sensed (TES) bolometers, kinetic inductance detectors (KIDs), and quantum capacitance detectors (QCDs), with an initial emphasis on the bolometers in preparation for the SPICA mission. We will implement frequency-domain readout techniques developed by a range of US and international collaborators, and the candidate(s) should be willing to travel and interface with a diverse range of scientists and engineers in support of this activity. We envision that the thrust of the work will be in the low-NEP detector system demonstration, but opportunities also exist for collaboration on ongoing and proposed ground-based and balloon-borne instruments targeting the early Universe. Examples include SuperSpec (a millimeter-wave spectrometer on a chip slated for the large millimeter telescope targeting individual high-redshift galaxies), TIME (a mm-wave tomographic intensity mapper targeting ionized carbon from the Reionization epoch), and TIM ((formerly STARFIRE), a proposed balloon-borne far-IR imaging spectrometer targeting the history of star formation when the Universe was half its current age). Key people in the JPL detector group include Pierre Echternach and Matt Kenyon

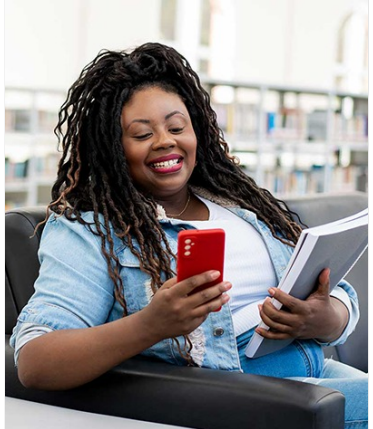
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Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, volume 7741 of Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, July 2010.

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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/oijr/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.