Compact, Low Power, Readout Electronics for KID Arrays, Phase I Project

SBIR/STTR Programs | Space Technology Mission Directorate (STMD)

ABSTRACT

We propose to demonstrate a low power radiation hard readout system for frequency multiplexing of large format arrays of Kinetic Inductance Detectors (KIDs). Large format arrays of superconducting detectors are a leading technology for a number of future NASA missions described in the recent astrophysics roadmap, ?Enduring Quests ? Daring Visions? (Koubeliotou, et al.)

ANTICIPATED BENEFITS

To NASA funded missions:

Potential NASA Commercial Applications: There are many NASA applications and programs to benefit from this R&D, which include: 1.A mission to map the polarization of the cosmic microwave background (CMB) at millimeter-wavelengths (CMB Polarization Surveyor) 2.A Far-Infrared Explorer to study star and planet formation in our galaxy and throughout cosmic time 3.A future large UV-optical-NIR mission (e.g. LUVOIR) with energy resolving single photon detectors for deep uv/optical/NIR low resolution spectroscopy 4.Future X-ray imaging spectrometers

To the commercial space industry:

Potential Non-NASA Commercial Applications: Non-NASA applications are more limited, but certainly extend to our allies national space astrophysics programs (ESA, NASDA, ISRO, etc) in Europe, Japan, India, etc.

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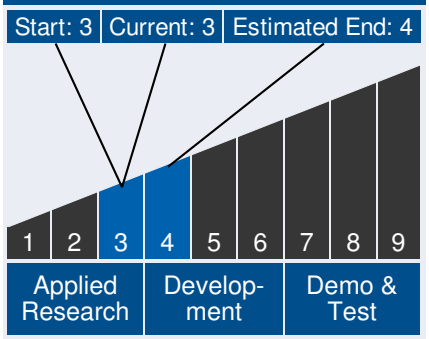
Technology Maturity



Management Team

Program Executives:

- Joseph Grant
- Laguduva Kubendran

Program Manager:

- Carlos Torrez

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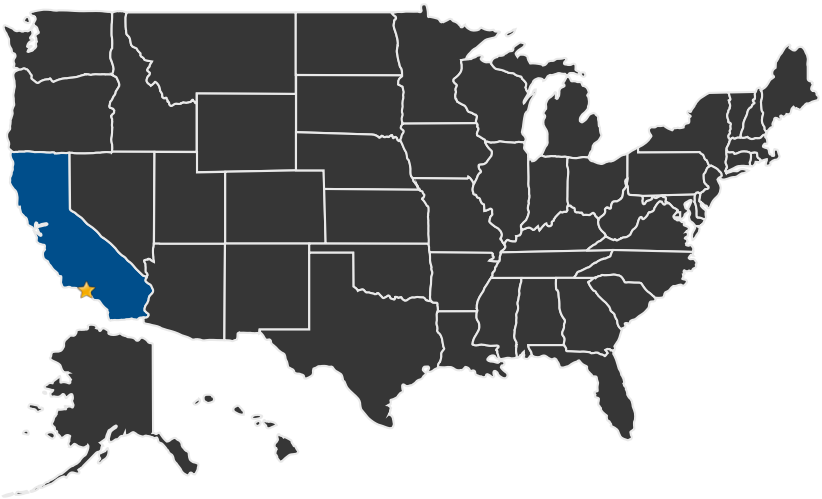
U.S. WORK LOCATIONS AND KEY PARTNERS



U.S. States With Work

Lead Center:
Jet Propulsion Laboratory

Other Organizations Performing Work:

- Space Micro, Inc. (San Diego, CA)

PROJECT LIBRARY

Presentations

- Briefing Chart
  - (http://techport.nasa.gov:80/file/23451)

Management Team *(cont.)*

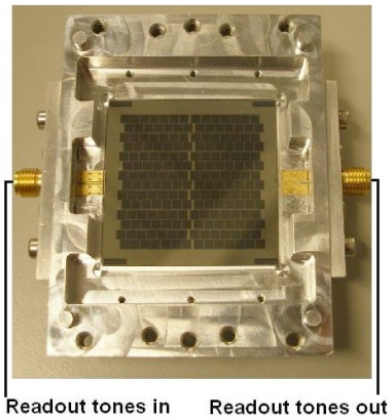
Principal Investigator:

- Dave Strobel

Technology Areas

Primary Technology Area:
Science Instruments, Observatories, and Sensor Systems (TA 8)
└ Remote Sensing Instruments and Sensors (TA 8.1)
  └ Detectors and Focal Planes (TA 8.1.1)

IMAGE GALLERY



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DETAILS FOR TECHNOLOGY 1

Technology Title

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Potential Applications

There are many NASA applications and programs to benefit from this R&D, which include: 1.A mission to map the polarization of the cosmic microwave background (CMB) at millimeter-wavelengths (CMB Polarization Surveyor) 2.A Far-Infrared Explorer to study star and planet formation in our galaxy and throughout cosmic time 3.A future large UV-optical-NIR mission (e.g. LUVOIR) with energy resolving single photon detectors for deep uv/optical/NIR low resolution spectroscopy 4.Future X-ray imaging spectrometers