Opportunity Title: Photonic devices for quantum sensors
Opportunity Reference Code: 0274-NPP-MAR24-JPL-TechDev

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0274-NPP-MAR24-JPL-TechDev

How to Apply All applications must be submitted in Zintellect

Application Deadline 3/1/2024 6:00:59 PM Eastern Time Zone

Description **Description:**

An array of emerging quantum instruments uses laser-cooled atoms as precision sensors. The potential impact

of these technologies, such as atom interferometer gravimeters and Rydberg-atom RF-electric probes can be greatly enhanced if cold-atom systems can be adapted from laboratory-scale experiments to compact, low-power field deployable probes.

Photonics and Quantum Sensors Group at Microdevices Laboratory of JPL, is accepting applications at the post doctorial level to design, fabricate, and characterize advanced semiconductor lasers and semiconductor optical amplifiers for quantum sensing applications. The quantum sensors under development require stable narrow linewidth single mode lasers and low current drive high saturation power optical amplifiers in the 600-850 nm wavelength range.

All semiconductor-based systems for atomic cooling experiments in space
M. Bagheri, J. Hunacek, E. Kittlaus, S. Chow, N. Yu and S. Forouhar (in preparation)

Semiconductor Optical Amplifier-based Laser System for Cold-Atom Sensors
Eric A. Kittlaus, Jonathan Hunacek, Mahmood Bagheri, Hani Nejadriahi, Sheng-wey Chiow, and Siamak Forouhar (in preparation)

All-semiconductor continuous-wave volumetric ranging for spaceborne differential absorption lidar July 2023
DOI:10.1117/12.2690302
• Conference: International Conference on Space Optics — ICSO 2022

Battery-Operated Mid-Infrared Diode Laser Frequency Combs
Lukasz A. Sterczewski, Mathieu Fradet, Clifford Frez, Siamak Forouhar, Mahmood Bagheri
First published: 15 September 2022
https://doi.org/10.1002/lpor.202200224
Field of Science:

- Technology Development

Advisors:

Siamak Forouhar

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Siamak.Forouhar@jpl.nasa.gov
(818) 393-5023

Sarath Gunapala
sarath.d.gunapala@jpl.nasa.gov

Mahmood Bagheri
mahmood.bagheri@jpl.nasa.gov
(818) 354-0413

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

Qualifications Experience fabricating GaAs lasers and amplifiers

Eligibility Requirements

- **Degree:** Doctoral Degree.