

Opportunity Title: Laser-Cooled Optical Clocks and Quantum Sensors for Space Applications

Opportunity Reference Code: 0087-NPP-NOV23-JPL-TechDev

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0087-NPP-NOV23-JPL-TechDev

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

Description I am interested in developing laser cooling based quantum sensors for applications in remote sensing and fundamental tests of gravitational theory. These include atom interferometric sensors of gravitational fields and gradients[1], and of rotation. I am also interested in the development of optical clocks for space applications, including tests of fundamental physics. In addition I have had a long interest in the study of Bose-Einstein condensation[2], and possible microgravity experiments in this field. Candidates with a background in laser cooling, optical clocks, and atom interferometry are encouraged to apply.

1. James R. Kellogg , Nan Yu , James M. Kohel, Robert James Thompson, David C. Aveline, Lute Maleki, "Longitudinal coherence in cold atom interferometry" J. Modern Optics 54, pp 2533 – 2540 2007.

2. N. Lundblad, R. J. Thompson, D. Aveline, and L. Maleki, "Dual Beam Atom Laser Driven by Spinor Dynamics," Optics Express, 14, pp 10164-10170 2005.

Location:

Jet Propulsion Laboratory
Pasadena, California

Field of Science:Technology Development

Advisors:

Robert Thompson
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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/oiir/export-control>.

Eligibility is currently open to:



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- 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

This opportunity may require the following: 1- Mandatory drug testing; 2-Random drug testing; 3- Testing prior to initiation of fellowship appointment.

Eligibility Requirements • **Degree:** Doctoral Degree.