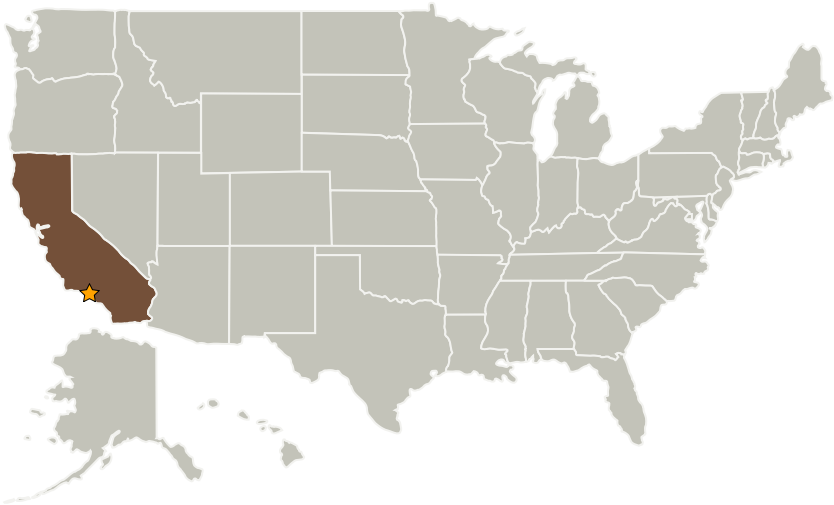
Ultra Low Noise 1.06 Micron Laser Oscillator, Phase II

Completed Technology Project (2005 - 2007)

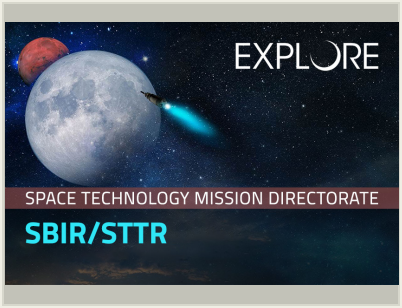
Project Introduction

The Laser Interferometer Space Antenna (LISA) demand state-of-the-art ultra-stable and low noise coherent lasers. This is a proposal to develop a space qualified high power, single mode, low noise and narrow linewidth fiber laser based on a"virtual ring" laser cavity at the 1.06 micron spectral band. This novel laser architecture enables traveling-wave oscillation in a compact, linear and all-fiber cavity. This leads to unprecedented low noise and stable laser oscillator. The all fiber device also offers a highly reliable, compact and power conserving solution. We have already demonstrated virtual ring oscillators at the 1.55 micron band that rival the state of the ring laser architecture. In this research we will develop a 1.06 micron laser that can meet or exceed the LISA experiment required laser specifications.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
Orbits Lightwave, Inc.	Supporting Organization	Industry	Pasadena, California



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Primary U.S. Work Locations
California

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX08 Sensors and Instruments
  └ TX08.1 Remote Sensing Instruments/Sensors
    └ TX08.1.5 Lasers