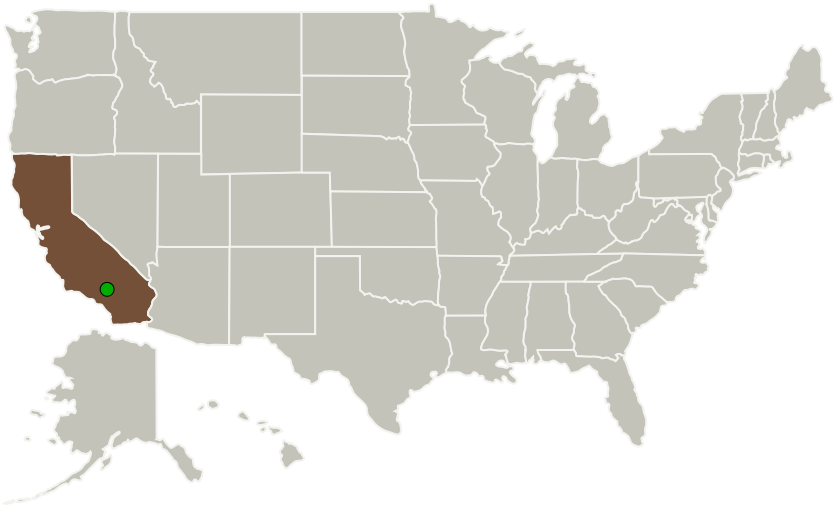
Long-Range Nondestructive Testing System, Phase I

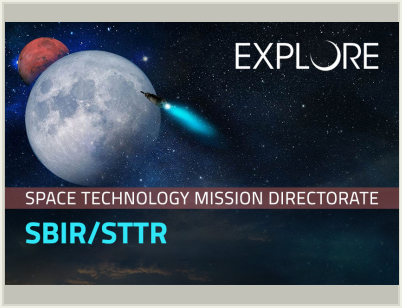
Completed Technology Project (2011 - 2011)

Project Introduction

This proposal is for the development of a long range, multi-point non-destructive system for the detection of subsurface flaws in metallic and composite materials of modern aircraft. This system would improve the test capabilities of NASA's ground facilities, specifically the Flight Loads Laboratory (FLL). MetroLaser proposes to use a multi-beam laser Doppler vibrometer (LDV) capable of arbitrary beam patterns on the target. This system coupled with acoustic or vibration excitation would reveal changes in the stiffness of the material, which are related to internal flaws within the material. This approach, based on the well-known LDV technique, is unique and innovative in the way it addresses the measurement requirement with multiple beams in an arbitrary beam pattern for high-speed coverage of large target areas. The Phase I work would consist of modeling, analysis and experimental work to define the system architecture and the measurement strategy, and would include developing a breadboard sensor to perform proof-of-concept experiments. It would culminate with a conceptual design of a Phase II prototype.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
MetroLaser, Inc.	Lead Organization	Industry Minority-Owned Business, Small Disadvantaged Business (SDB)	Laguna Hills, California
Armstrong Flight Research Center(AFRC)	Supporting Organization	NASA Center	Edwards, California

Primary U.S. Work Locations
California

Project Transitions

February 2011: Project Start

September 2011: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138262)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

MetroLaser, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

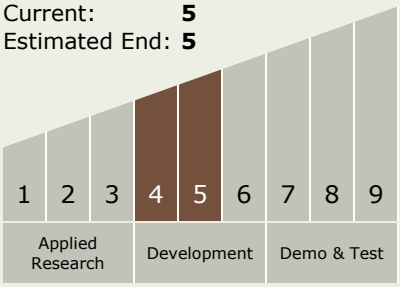
Cecil F Hess

Co-Investigator:

Cecil Hess

Technology Maturity (TRL)

Start: **4**
Current: **5**
Estimated End: **5**



Technology Areas

Primary:

- TX01 Propulsion Systems
  └ TX01.4 Advanced Propulsion
    └ TX01.4.4 Other Advanced Propulsion Approaches

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System