Total Dose Regeneration of COTS Using a Thermally Controlled Packaging Approach

Completed Technology Project (2015 - 2016)

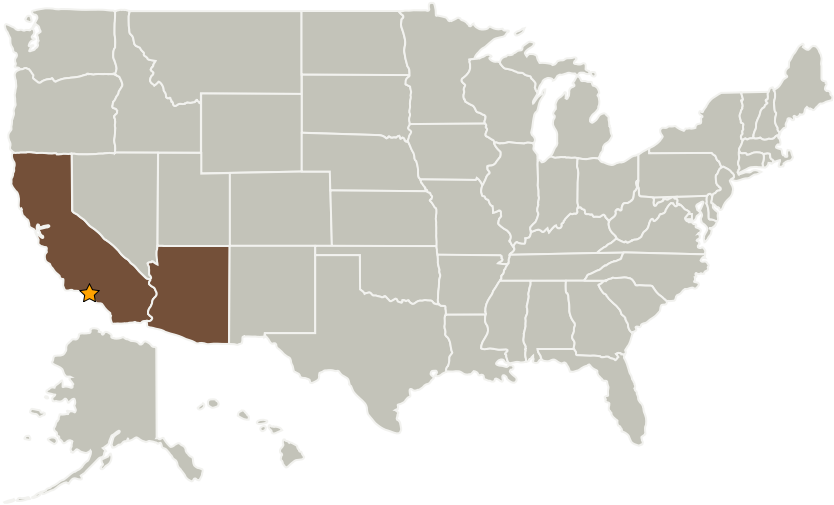
Project Introduction

The objectives are to provide on-board post-irradiation regeneration system to COTS parts to enhance their radiation tolerance. The end product is the experimental demonstration of a novel packaging approach based on a resistor grid that is used to regenerate devices in presence of radiation. Key Innovations: controllable thermal resistor grid arrays to be incorporated in COTS systems that use chip-on-board technology to enhance their radiation performance.

Anticipated Benefits

This capability can be used for any mission that require the use of COTS components. It will be considered, if successful, for Europa applications. It has the potential to extend the lifetime of Cube-Sat/Small-Sat missions and science instruments.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Center Innovation Fund: JPL CIF

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Organizations Performing Work	Role	Type	Location
★Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
Arizona State University-Tempe(ASU)	Supporting Organization	Academia	Tempe, Arizona

Primary U.S. Work Locations	
Arizona	California

Project Website:

https://www.nasa.gov/directorates/spacetech/home/index.html

Project Management

Program Director:

Michael R Lapointe

Program Manager:

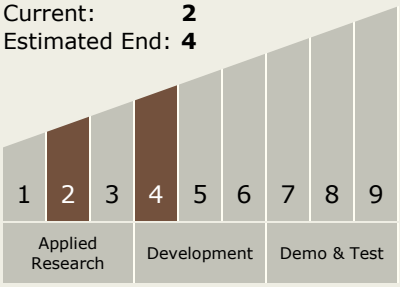
Fred Y Hadaegh

Principal Investigator:

Philippe C Adell

Technology Maturity (TRL)

Start: **2**
Current: **2**
Estimated End: **4**



Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  └ TX12.3 Mechanical Systems
    └ TX12.3.7 Mechanism Life Extension Systems