Los Alamos
NATIONAL LABORATORY
EST. 1943

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Los Alamos National Laboratory Overview

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NNSA


New
Mexico


NEW MEXICO
LAND OF ENCHANTMENT


NORTH
WEST
CENTRAL
EAST
SOUTH


Los Alamos
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2013

10 Best Small Towns

Best Small Towns

13 30

6 Los Alamos, NM

« PREV NEXT »

With one of the highest concentrations of Ph.D. holders in the nation, Los Alamos, NM, stands out as the "smartest" small town. Innovative education, health and recreational programs have earned the city and surrounding county national recognition, including such titles as "healthiest" and "wealthiest" places in America.

The city's location atop the Pajarito Plateau, near the Jemez Mountains, not only provides breathtaking views but gives residents easy access to high-altitude sports such as mountain biking, skiing, rock climbing and hiking. An urban trail system connects to forest paths. Golf courses, parks, a skating rink and aquatic center provide even more recreational options. Cultural landmarks like the Bradbury Science Museum, Fuller Lodge Art Center, and the Los Alamos Little Theatre frequently hold special events and educational programs for children and adults.

The Los Alamos National Laboratory employs more than 7,000 people and the area's science-based businesses attract top talent from across the globe, making the city the most culturally diverse in New Mexico. Scientific endeavors such as the Manhattan Project, the development of super computing, the Human Genome Projects and the creation of the world's fastest movie camera, reflect the community's innovative spirit. Research and development continues to be the driving economic force. Local companies support initiatives that get children interested in science, technology and art.

USA.COM

Los Alamos Public Schools (1.8 miles)
751 Trinity Dr
Los Alamos, NM 87544
phone: 505-663-2222
Regular Local School District **Grade:** Prekindergarten to Grade 12
7 Schools **Students:** 3,455 **Teachers:** 247.08 **Student-Teacher Ratio:** 13.98
High School: ★★★★★ Elementary/Middle School: ★★★★★

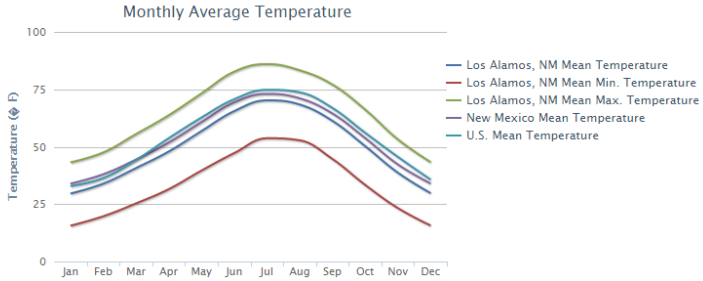
Family Income

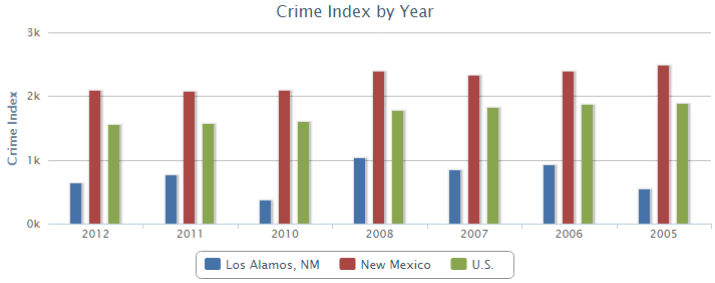
Median Family Income, see rank

Los Alamos, NM	124,284 USD
New Mexico	54,221 USD
U.S.	64,585 USD

Mean Family Income, see rank

Los Alamos, NM	135,943 USD
New Mexico	70,760 USD
U.S.	85,065 USD

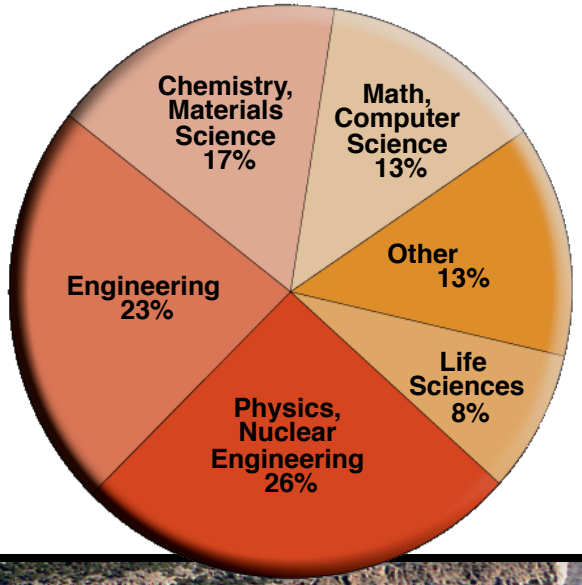




http://livability.com/best-places/top-10/best-small-towns/10-best-small-towns/2014/los-alamos

Los Alamos National Laboratory
Broad and In-Depth Science & Engineering Capabilities

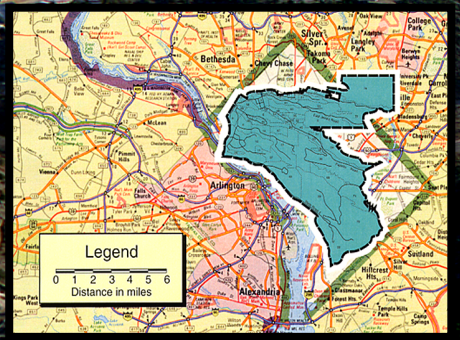
People are Los Alamos' Greatest Asset



Unique Facilities

- **Dual-Axis Radiographic Hydrodynamic Test (DARHT) Facility**: Two large perpendicular x-ray machines that produce 3-D freeze-frame radiographs of materials that implode at speeds greater than 10,000 miles per hour.
- **Los Alamos Neutron Science Center (LANSCE)**: Provides the scientific community with intense sources of neutrons for civilian and national security research.
- **National High Magnetic Field Laboratory (NHMFL)**: National user facility for high magnetic field science in collaboration with Florida State University and the University of Florida.
- **SIGMA Complex**: One of a kind materials research facility supporting nuclear weapons design and production, threat reduction and homeland security.
- **Center for Integrated Nanotechnologies (CINT)**: World leader in nanoscale science.
- **World-Class Super Computing Facilities**: 3-D Power Wall provides animated projections of simulation results in extremely high resolution. Next generation super computer, Trinity, housed at LANL may reach 40 petaflops.

Core Employees	9000
Technical Staff	4000
PhD	3000
Post-docs	400
Students	1500
Operating budget ~$2.4 B	
Land area ~40 square miles	



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Intelligence and Space Research

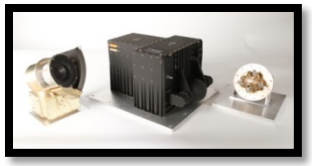
Los Alamos National Laboratory

From Space, In the Air, On the Ground

What We Do

- **ISR Division's Mission:** Create, deliver, support, and exploit innovative sensing systems for space-based, airborne, and ground-based applications to address critical national security and scientific challenges.
- **Our Core Business is Space**
- **We Focus on Impulsive Signatures**
- **We Provide End-to-End Solutions**

We Innovate



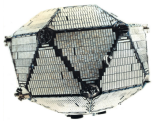
CREATE

ENGAGE

Deliver

Develop

Operate

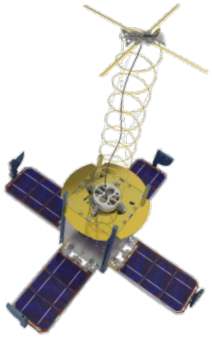


Design

Collect

Analyze

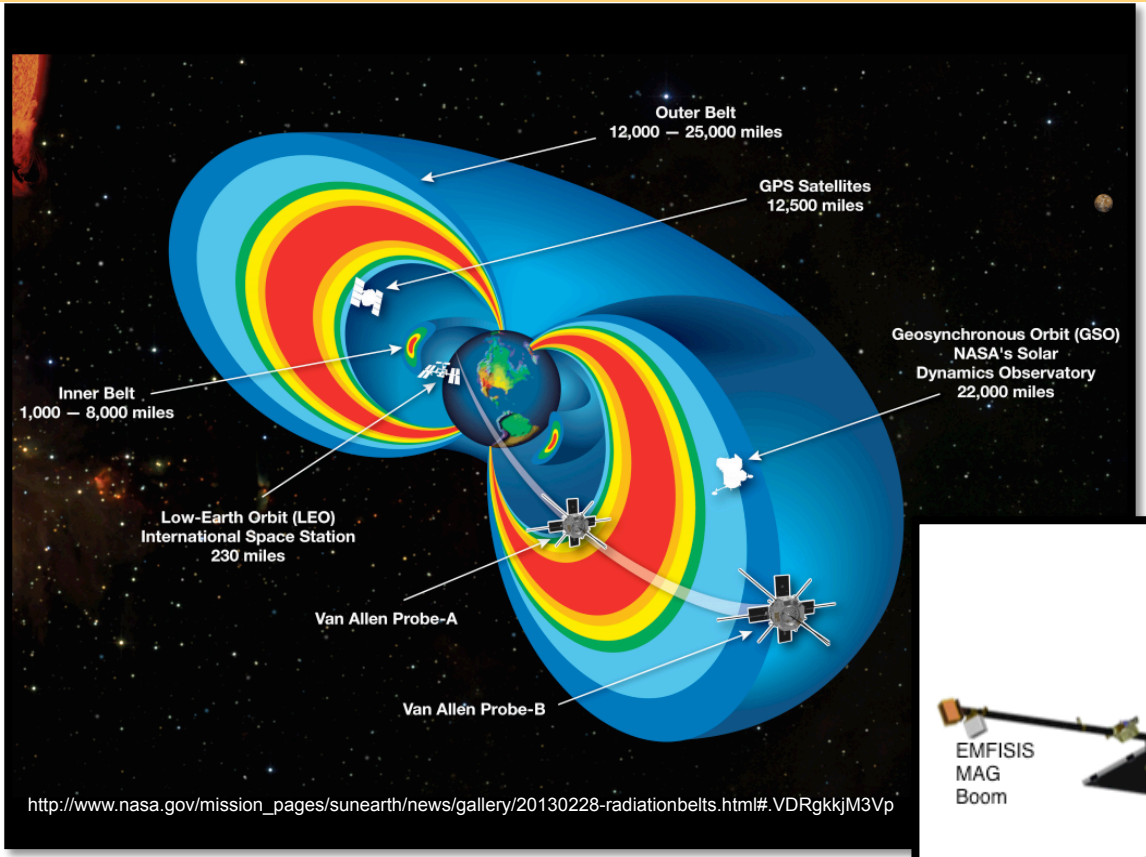
DISCOVER

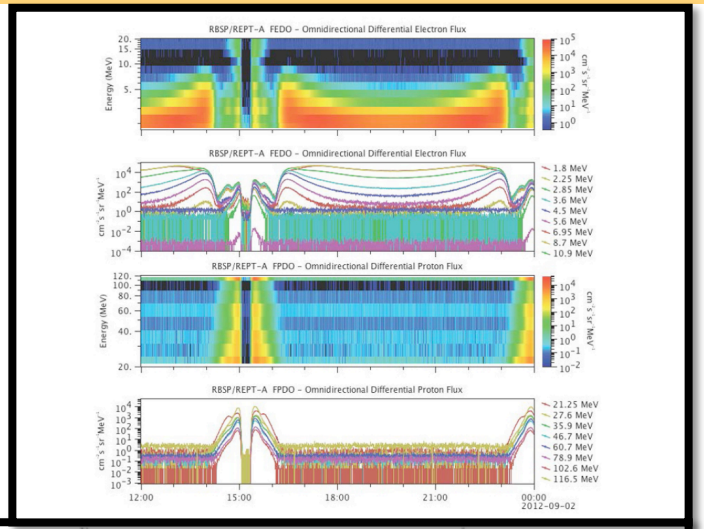


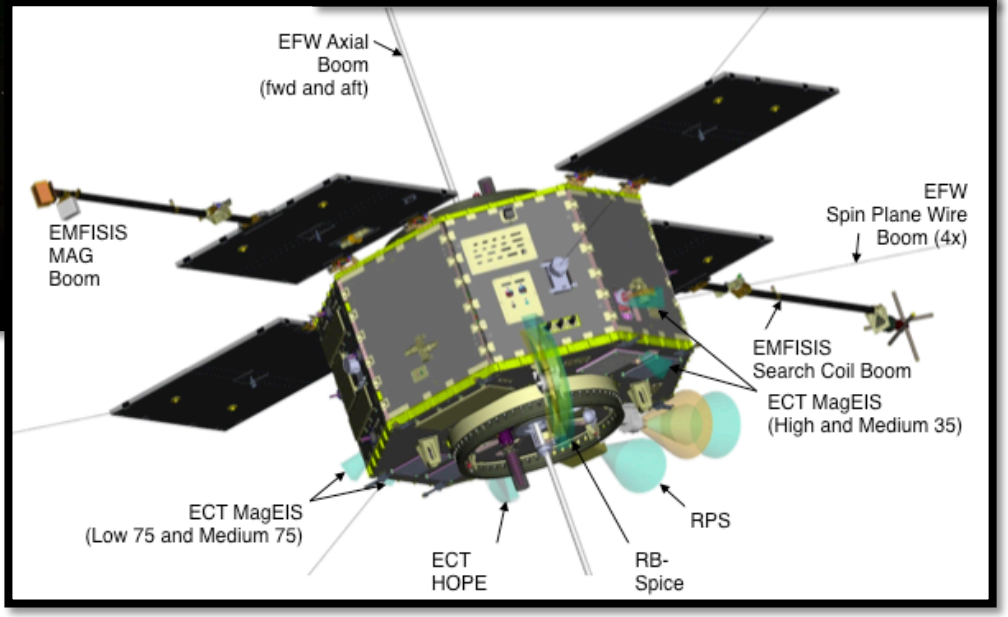
Our Core Capabilities

- **ISR-1 Space Science & Applications**
  Core: hard radiations, charged particles, and plasmas
- **ISR-2 Space & Remote Sensing**
  Core: radio frequency, microwave, infrared, and optical
- **ISR-3 Space Data Systems**
  Core: data collection and processing, information exploitation, and delivery
- **ISR-4 Space Electronics and Signal Processing**
  Core: electrical engineering and signal processing
- **ISR-5 Space Instrumentation Realization**
  Core: instrumentation packaging, production, and test

Radiation Belt Storm Probes (RBSP)







Data Image Credit: http://www.nasa.gov/mission_pages/rbsp/multimedia/20120911-02.html#.VDR4AEjM3Vp

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Radiation Detection Equipment

Advanced Radiation Measurement Device (ARMD)

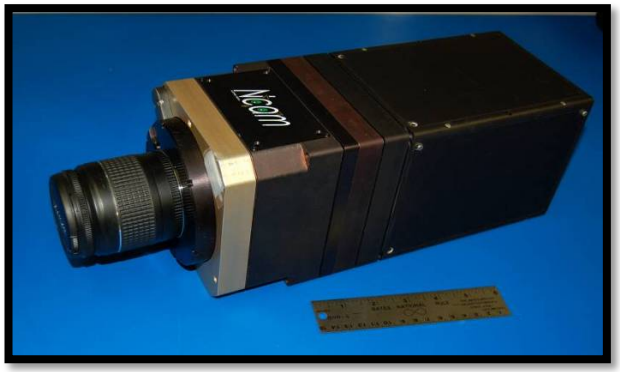
Standoff Radiation Detection System (SORDS)

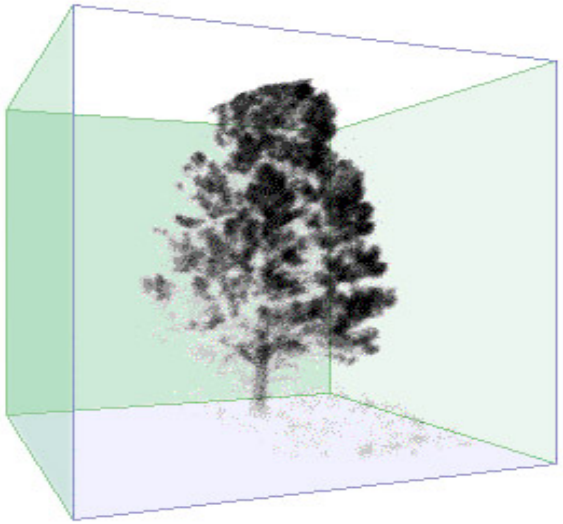
Radio Frequency (RF) and Signal Analysis

Spaceborne Software Defined Radio – A TeraOps Supercomputer in Space

Remote Ultra-Low Light Imaging (RULLI) with Ncam (Nocturnal Camera)

- **Extreme low light imaging**
- **Noiseless motion correction**
- **Nocturnal measurement and signatures intelligence (MASINT)**
- **Active 3-D and color imaging**



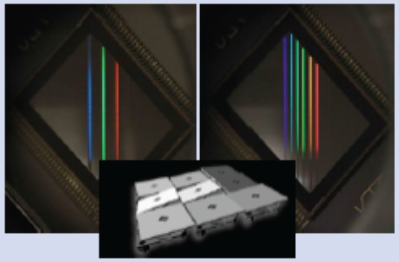


Daytime image with a digital camera

Nighttime color RULLI image (Moonless/Overcast)

Passive Hyperspectral Imaging

Rapidly reprogrammable spectral imaging with Micro-Electro-Mechanical System (MEMS)-based programmable spectral filters



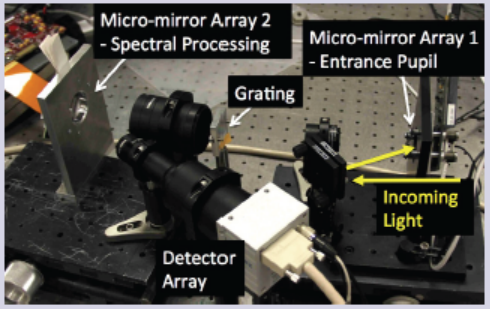
Micro-mirrors provide complete control over the spectral content of the 2-D image.

Create precision multi-band filters (custom band centers, widths, transmission, etc.) for multispectral imaging applications.

Acquire data cubes using Hadamard functions for higher SNR and faster integration.

Encode matched-filter coefficients directly into optical field for real-time signature detection.

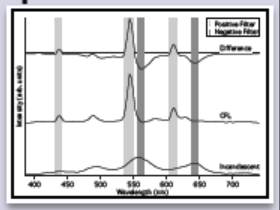
Scale up to hyperspectral imaging with ease.

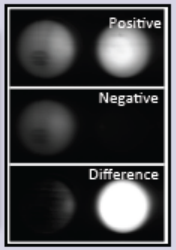


Working vis/NIR prototype and field deployment

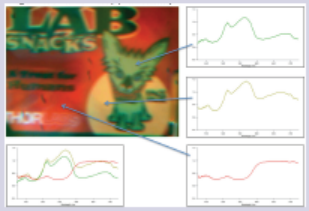
Programmable Operational Capabilities

Broadband / color imaging

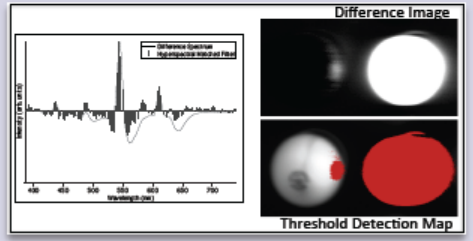




Multispectral filters

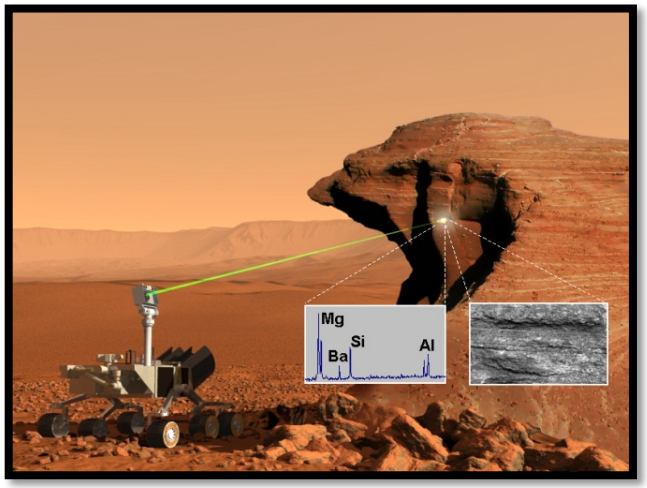


Hyperspectral data cubes



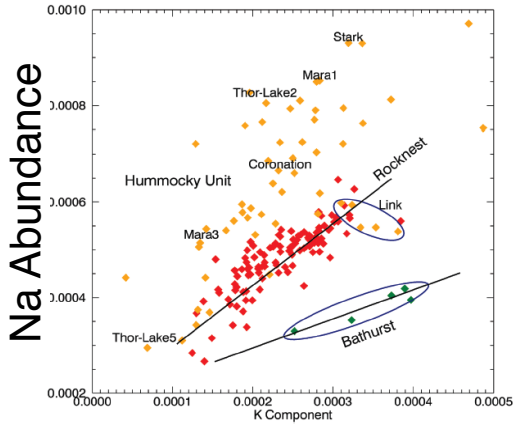
Real-time matched filter imaging

Active Spectral Sensing
ChemCam on NASA's Mars Science Lab

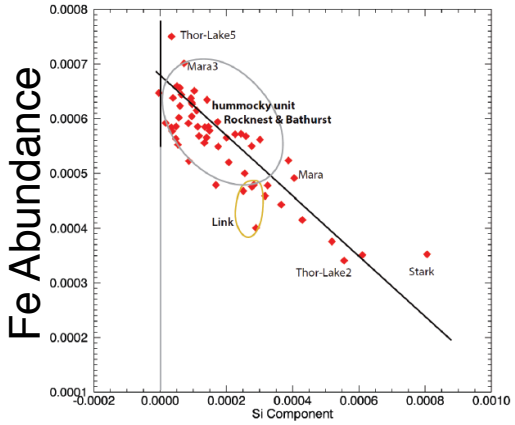


Laser-induced breakdown spectroscopy (LIBS)

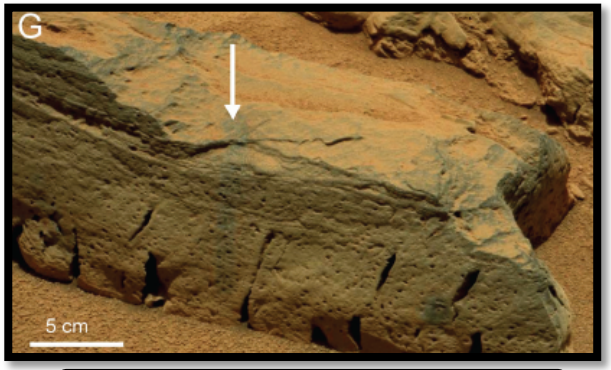
Measuring the geological domains on Mars



K Abundance



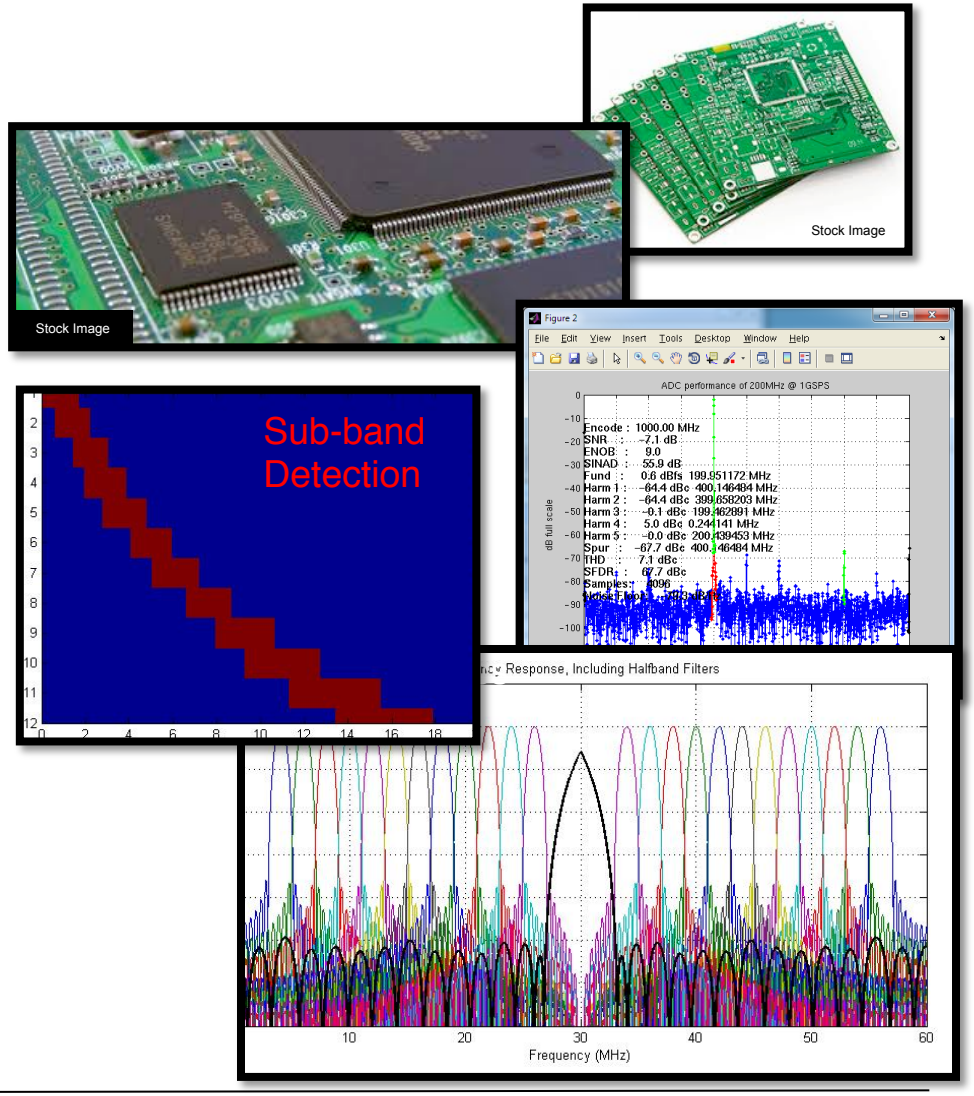
Si Abundance



Rocknest 3: LIBS Trace

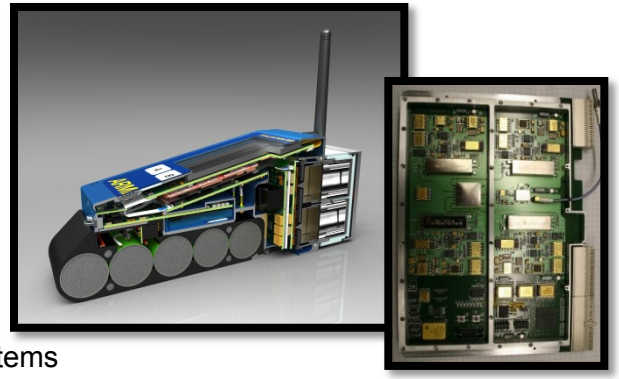
Electrical Engineering Capabilities

- **Custom Miniaturized Electronics**
  - Advanced Instrumentation Concept Development
  - Analog, Digital and RF Circuit Design
  - Field Programmable Gate Array (FPGA) Design
  - Application Specific Integrated Circuit (ASIC) Design
  - Power Supply Design
- **Analog and Digital Signal Processing**
  - Nuclear Instrumentation
    - Front End Electronics
  - RF Instrumentation
  - Software Defined Radio
    - Impulsive Signature Detection
    - Communications
- **LANL Signature Capabilities**
  - Nano-satellites
  - Remote Ultra Low Light Imaging
  - Quantum Secured Communications
- **Engineering Management**

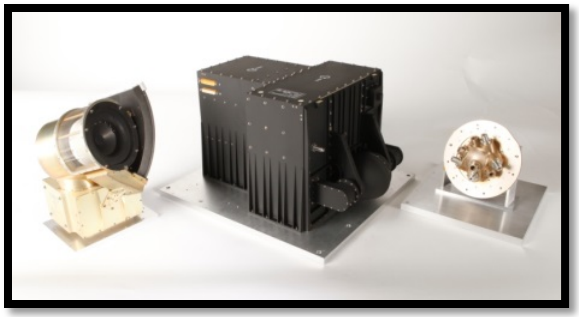


Production Capabilities

- **Mechanical engineering – specialized equipment design**
  - Mechanical design and advanced electronics packaging, assembly, design, and fabrication support to all aspects of mechanical and electronic assemblies
  - Mechanical analysis with a focus on the space environment – radiation, thermal, vibration analysis, and test development
  - Environmental testing (vibrations, shock, vacuum, thermal, de-pressurization)
  - Design and fabrication of special tooling, fixtures, and handling equipment as required for assembly and testing of hardware
  - Interface between mechanical design, fabrication, and parts suppliers
- **Fabrication and Assembly**
  - Electronic board support ECAD layout
  - Electronics troubleshooting and fabrication (NASA certified assembly)
  - Parts inventory database based on pc/MRP
  - Quality Assurance (QA)
- **System Test and Integration**
  - Space systems engineering support (CXD, BVD, HASM)
  - RF and analog electronic development, design, and testing for flight-based systems
- **Systems, Production, and Project Controls – Hands-on fabrication and manufacturing experience, scheduling, coordinating activities to complete a project, and systems engineering**

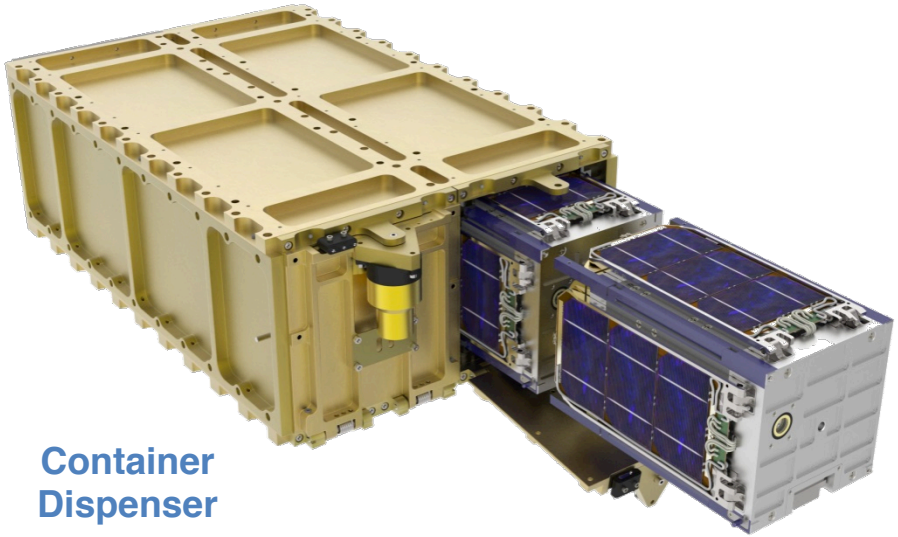


SABRS *(Space and Atmospheric Burst Reporting System)*

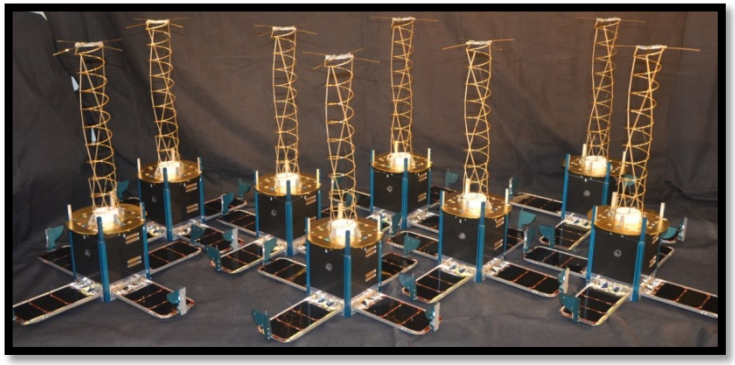


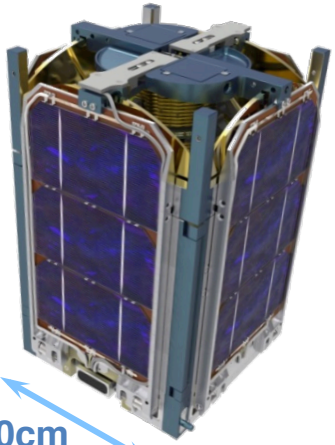
BDV *(EMP sensor on GPS)*

CubeSats - Prometheus



Container
Dispenser

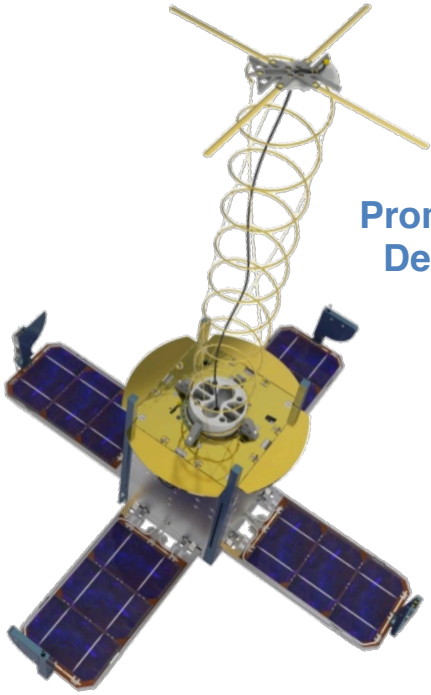




17cm

Prometheus
Stowed

10cm



Prometheus
Deployed

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