



**Microgravity Science Division
Acceleration Measurement Program Overview
Glenn Research Center**



Acceleration Measurement Program Overview

Dave Francisco
Acceleration Measurement/Microgravity Environment Program
Manager
Glenn Research Center
(216) 433-2653
David.Francisco@grc.nasa.gov



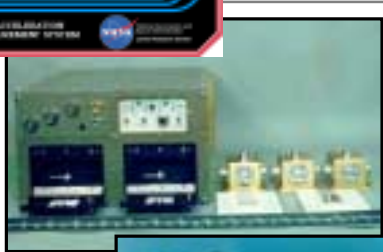
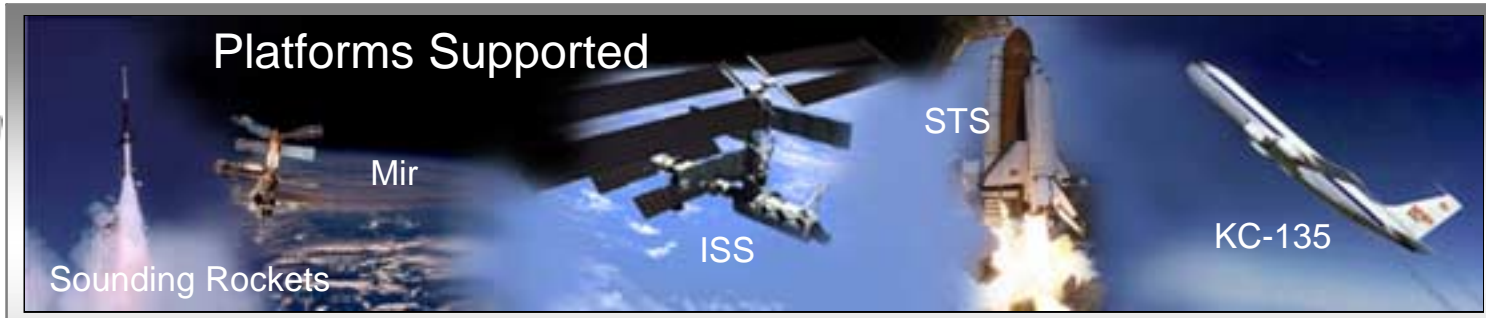
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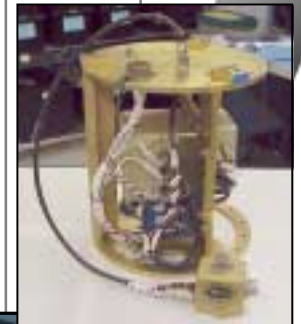
Acceleration Measurement Program - GRC

Program Charter:

- **Develop Acceleration Measurement Hardware for microgravity platforms (including low-g ground-based platforms)**
- **Analyze acceleration data for microgravity program Principal Investigators (primary customers)**
- **Characterize environment**
 - **Identify disturbances**
 - **Identify/track microgravity periods on ISS**
- **Disseminate acceleration data to research community**
- **Educate research community, crew and development teams about microgravity environment**
- **Ensure that the microgravity environment requirements are maintained on the ISS**



Microgravity
Emission Lab



Science Supported

Combustion

Fluid Physics

Fundamental Physics

Materials

Vehicle Dynamics

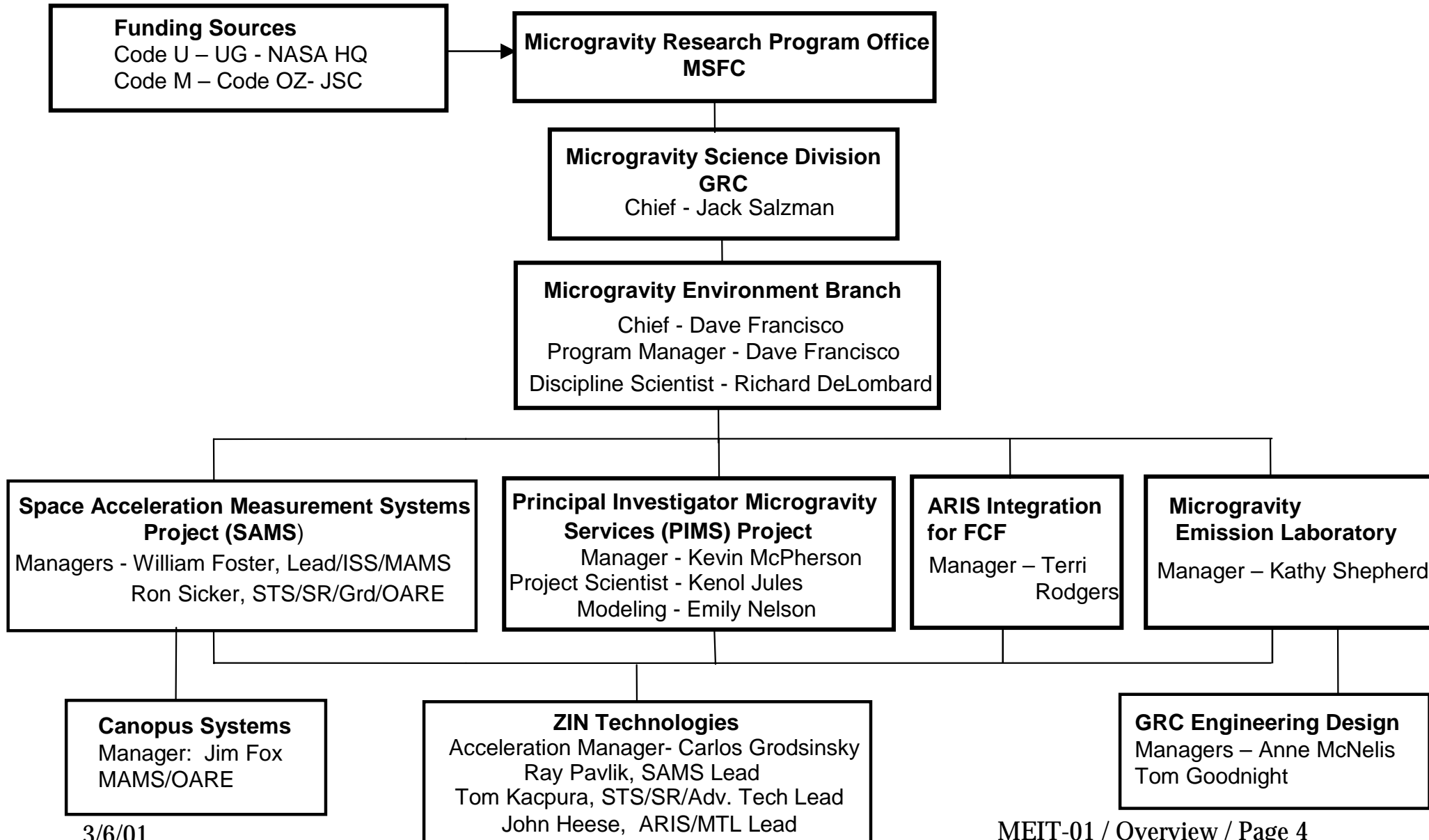
Biotechnology



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Acceleration Measurement Program - GRC



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- **Space Acceleration Measurement System(s) (SAMS) Development**

- Supports PIs by measuring/mapping acceleration environment on multiple platforms: Ground based (KC-135 & Drop Towers), Sounding Rockets, Shuttle, Mir and ISS



- **Missions supported on Sounding Rockets, STS, Mir**

- **Flown 20+ flights on STS & Mir**

- SAMS-Mir flight unit recovered by STS-91 after 45 months on Mir. **SAMS on STS**
 - Supported Hubble on STS 95, Sounding Rockets
 - **OARE - Low frequency measurement System flown 10 times on STS**

- **Hardware Development for International Space Station**

- **SAMS- II - Acceleration Measurement System for measuring acceleration environment on ISS (payloads and vehicle)**

- Hardware at KSC - Scheduled launch 6A
 - Initially supporting PIMS, PSC and ARIS ICE



- **MAMS - Microgravity Acceleration Measurement System -**

- Low frequency measurement system for ISS (payloads and vehicle)
 - Hardware in MPLM - Scheduled launch 6A
 - Supporting PIMS, ARIS ICE and vehicle

SAMS II - ISS



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- **PIMS - PI Microgravity Services** - These services include data analysis, data distribution, logging and tracking of ancillary information pertinent to the microgravity environment measured during experiment operations, and preparation of mission summary reports aimed at furthering the PIs understanding of the microgravity environment.
- 1500+ User Requests fulfilled (300+ International). Annual International Micro-g Meeting, Astronaut Education Classes & PI Microgravity Environment Interpretation Tutorials
- **Microgravity Requirement Verification** - Defend and interpret acceleration requirements for ISS.
- **Microgravity Emissions Lab**
 - Ground Based Facility to measure disturbances for all payloads on ISS. Verifies ISS requirement to be a good neighbor on ISS.
- **Active Rack Isolation System Integration for the Fluids and Combustion Facility**

All of these activities at Glenn are funded through NASA Code UG, the Microgravity Research Program Office at MSFC and the Space Station Program Office at JSC.