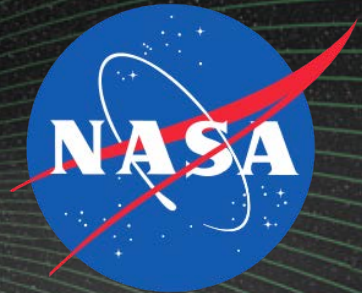
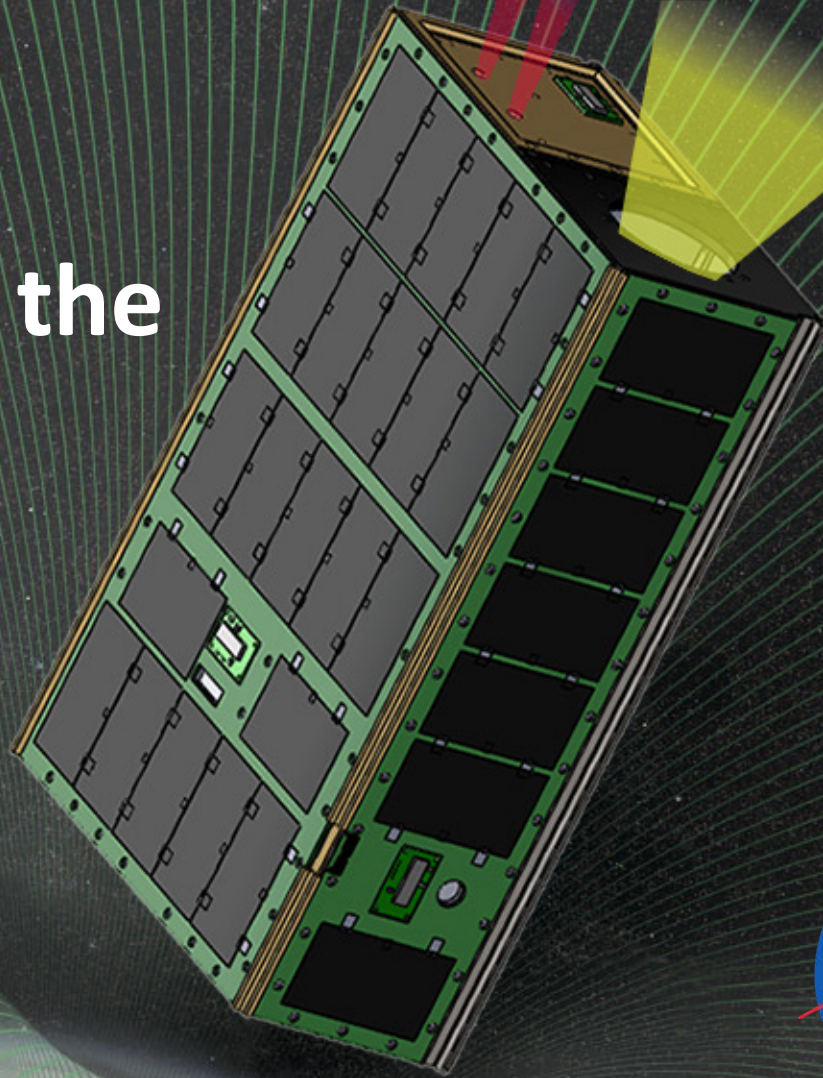
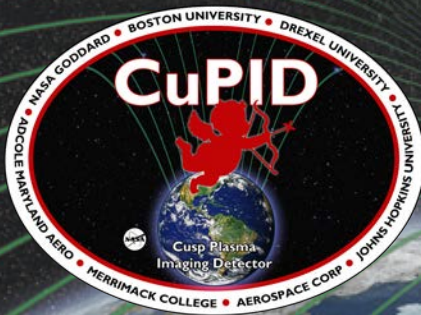


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Instruments on the CuPID Cubesat Observatory

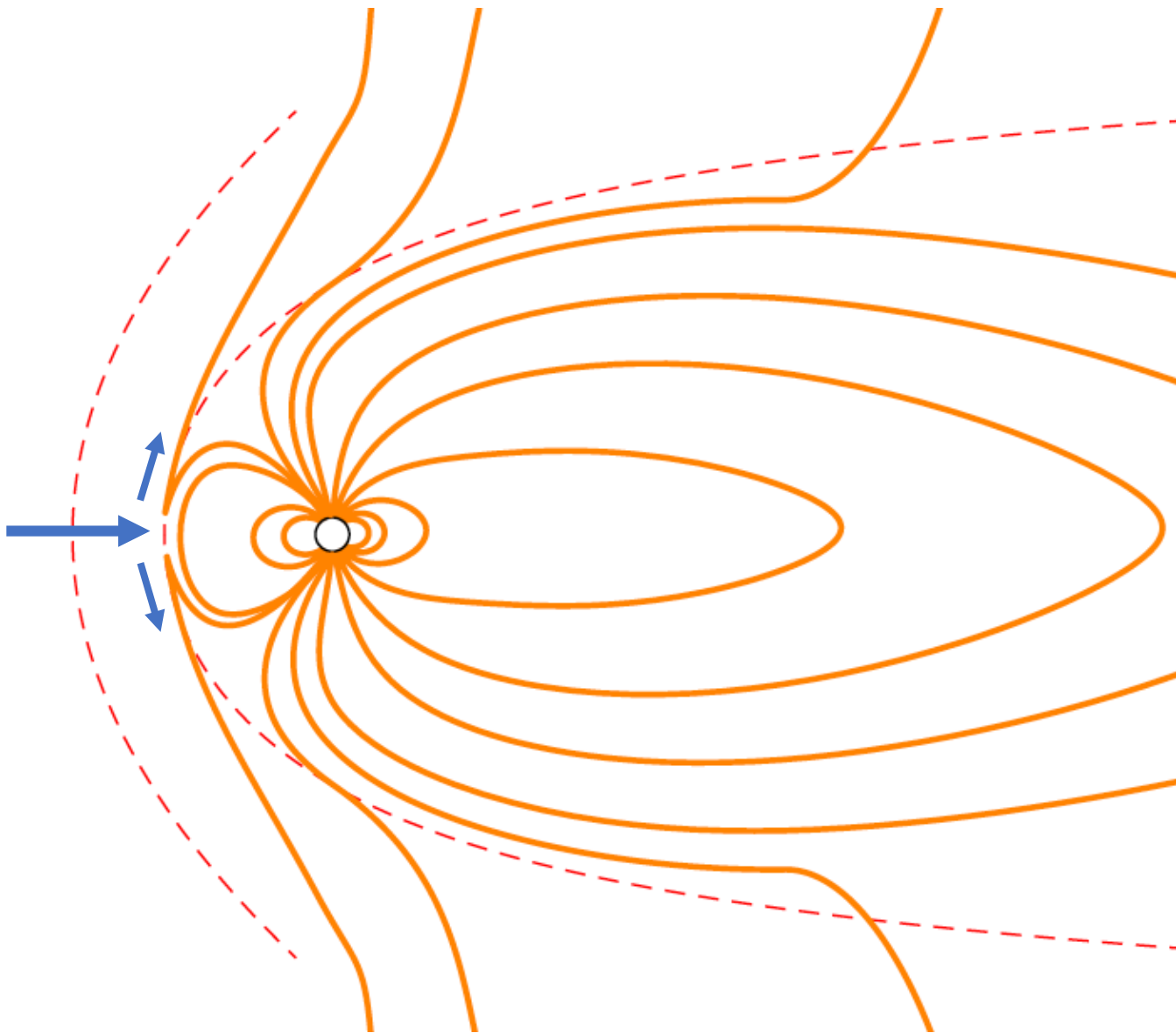
Emil A. Atz¹



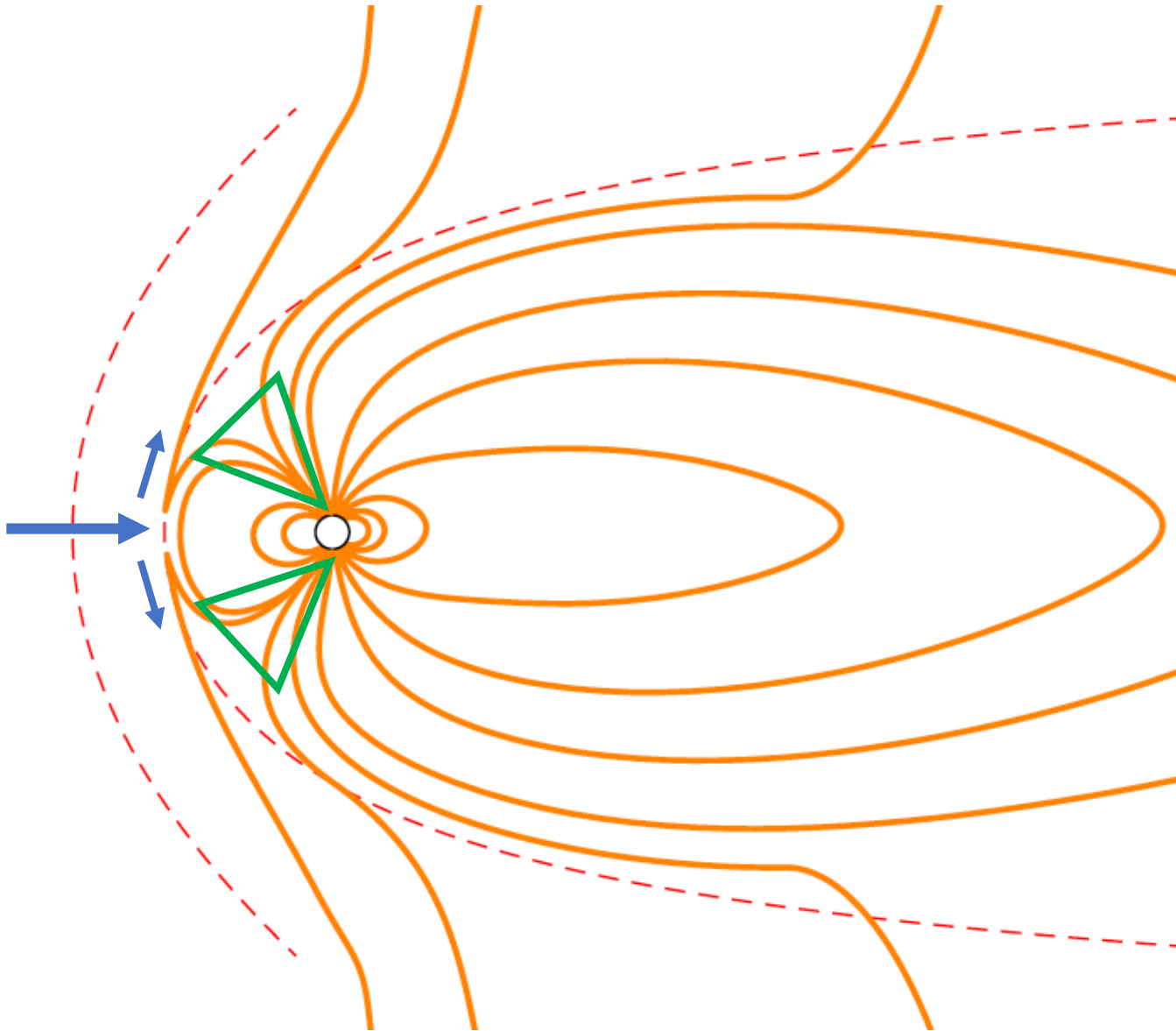
B.M. Walsh¹, L.J. Billingsley², M.R. Collier², H.J. Connor², B. Dingwall³, J. Kujawski⁴, K.D. Kuntz⁵, F.S. Porter², D.G. Sibeck², S.L. Snowden², N.E. Thomas², D.L. Turner⁶, A. Weatherwax⁷, A. Yousuff⁴, A. Zosuls¹

¹Boston University, Center for Space Physics; ²NASA Goddard Space Flight Center; ³NASA Wallops Flight Facility; ⁴Drexel University; ⁵The Henry A. Rowland Department of Physics and Astronomy, Johns Hopkins University; ⁶Space Science Applications Laboratory, The Aerospace Corporation; ⁷Merrimack College

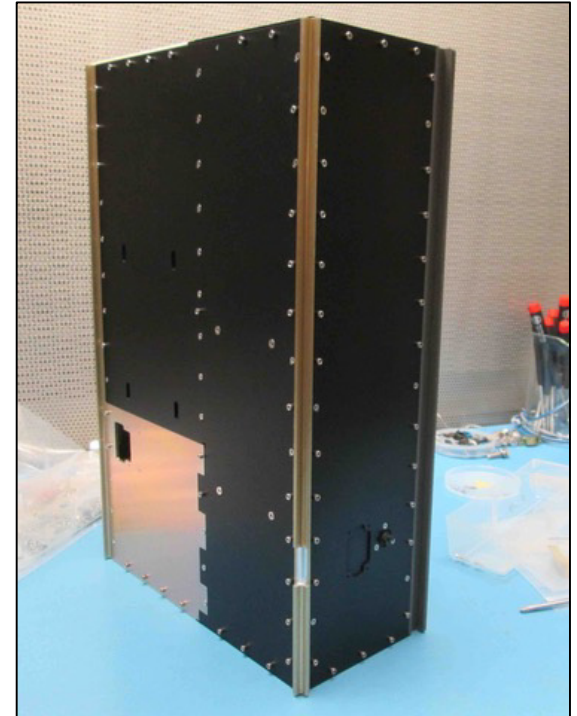
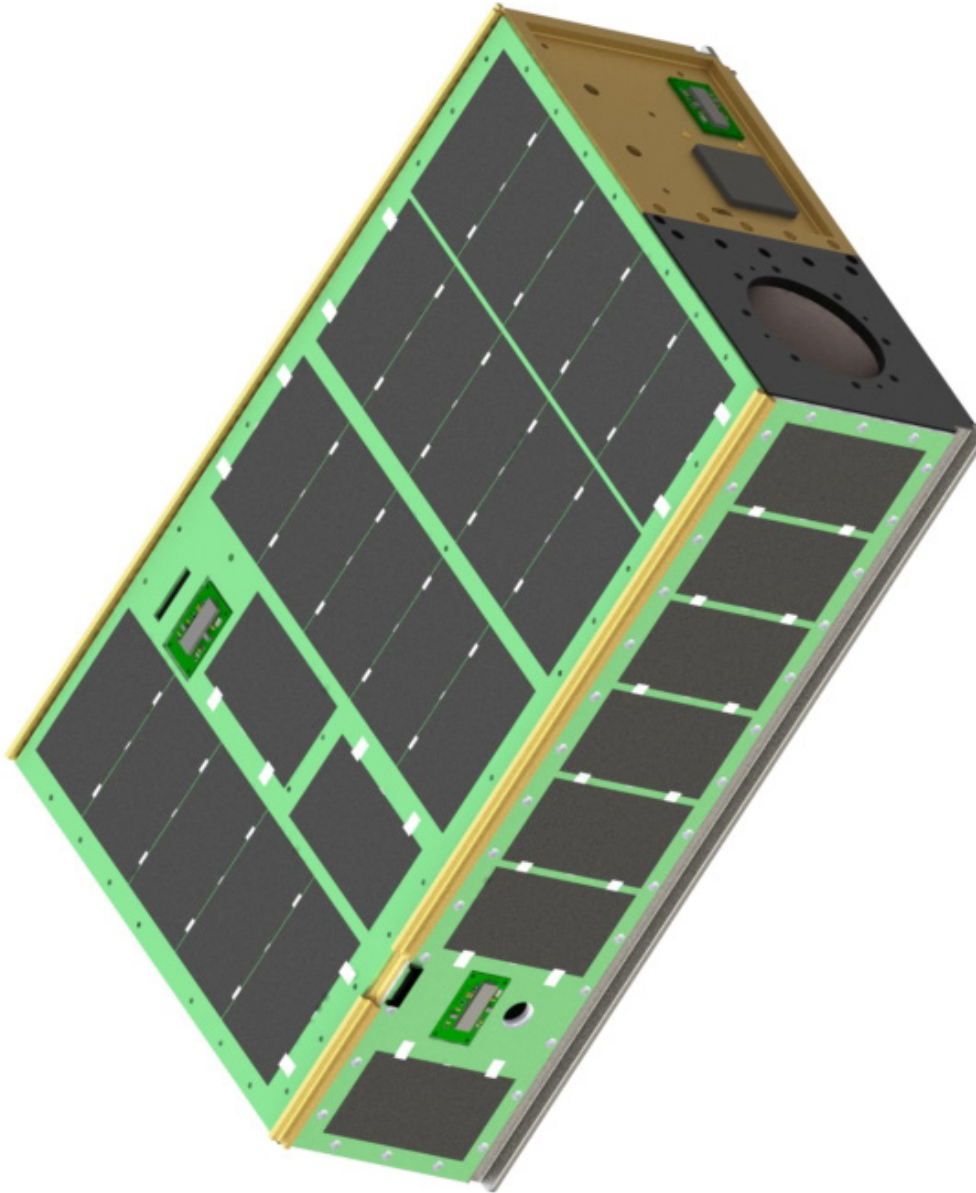
CuPID will test competing theories of magnetic reconnection



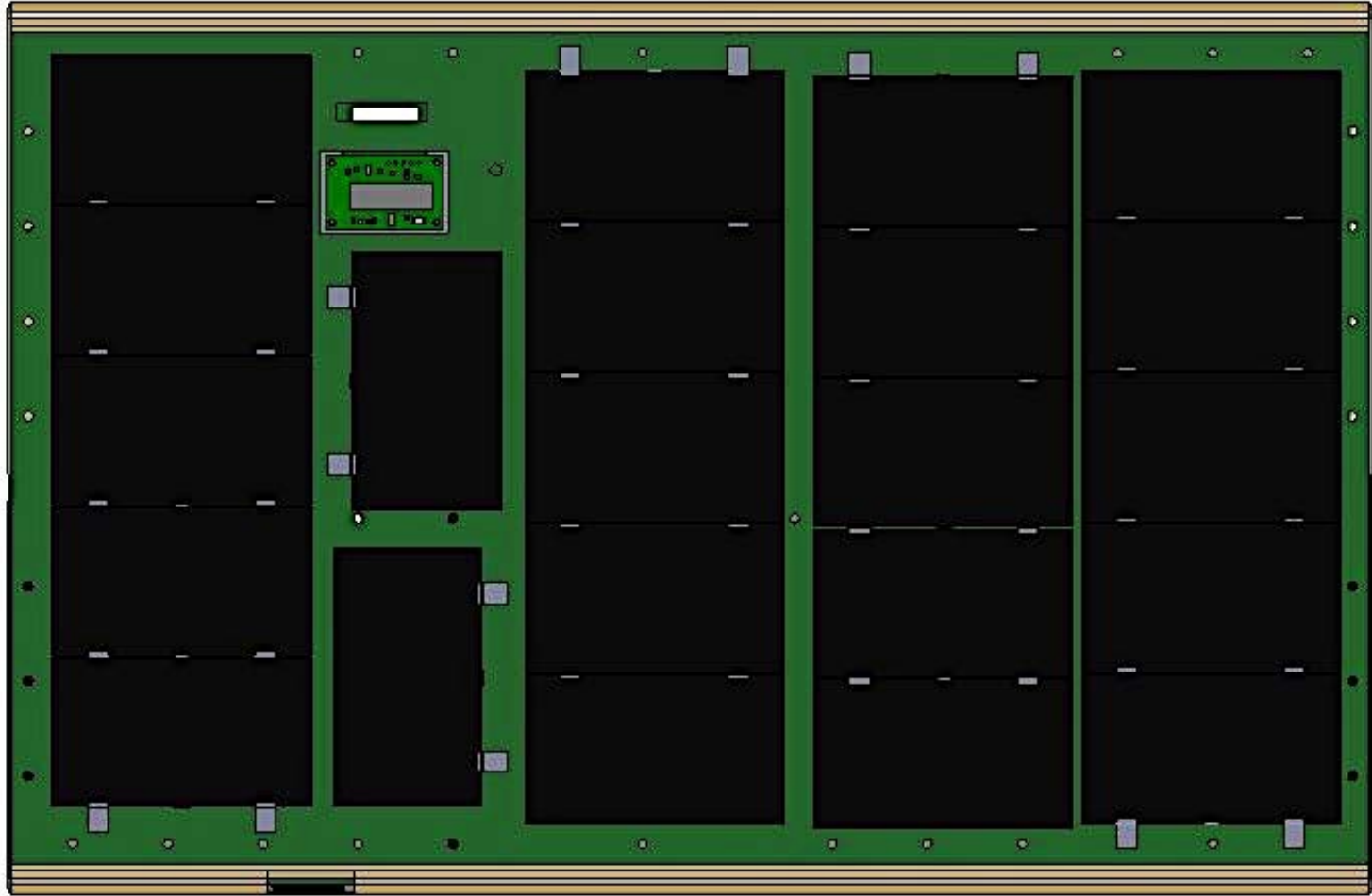
CuPID will test competing theories of magnetic reconnection by observing the magnetospheric cusps.



The 6U chassis houses **two** instrument payloads and a custom avionics system for 3-axis control.

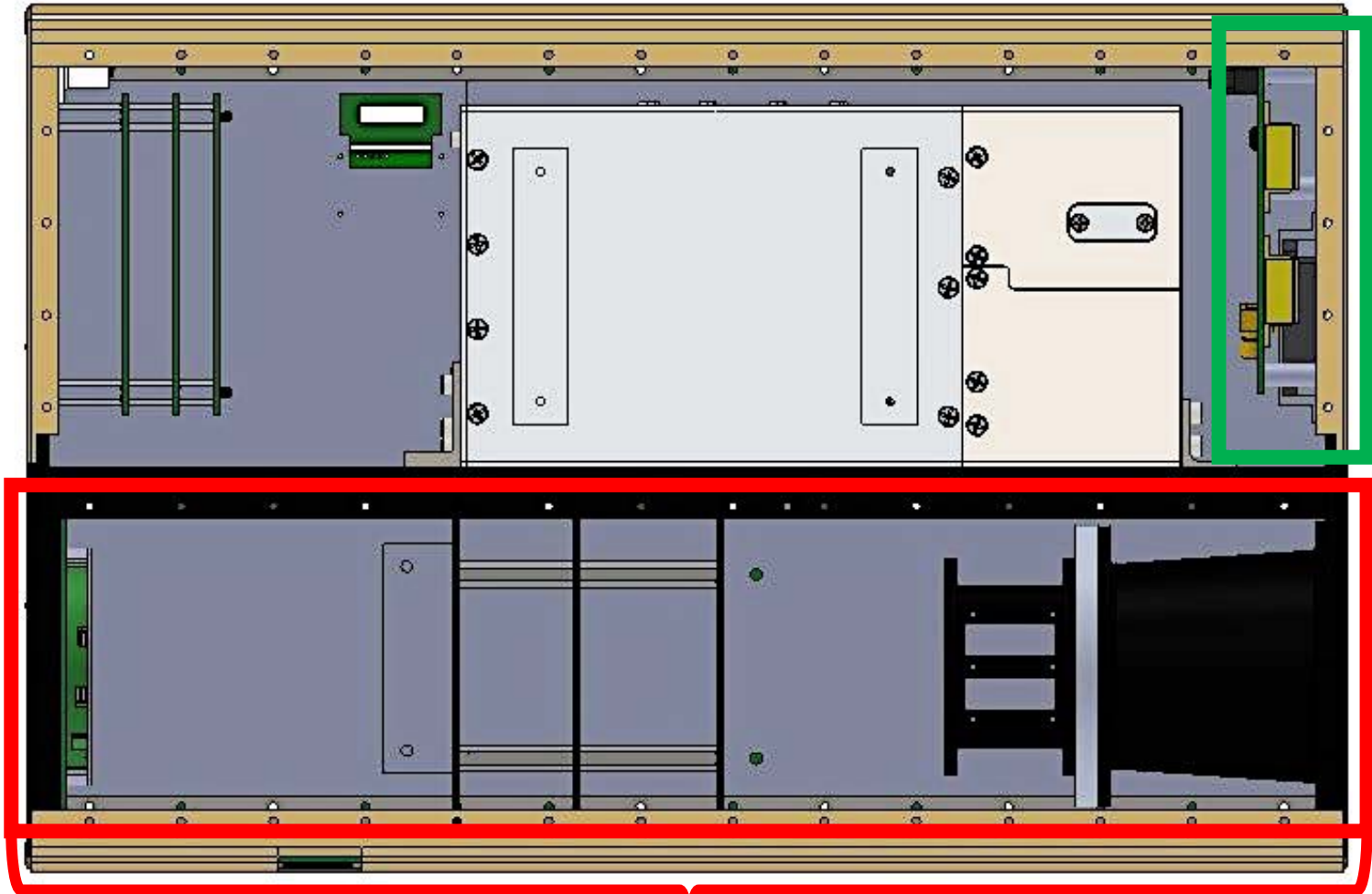


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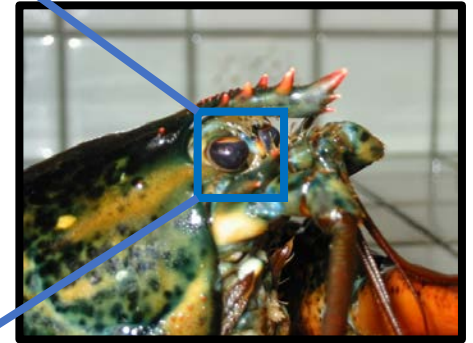
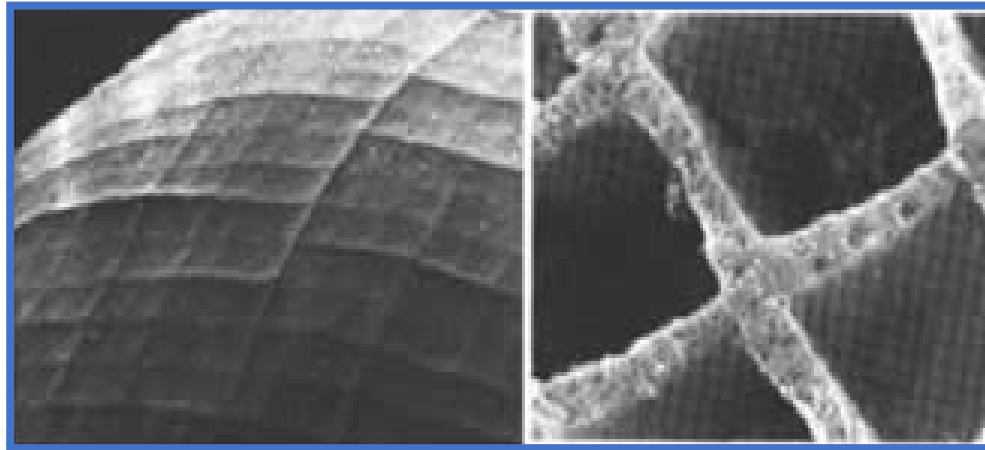
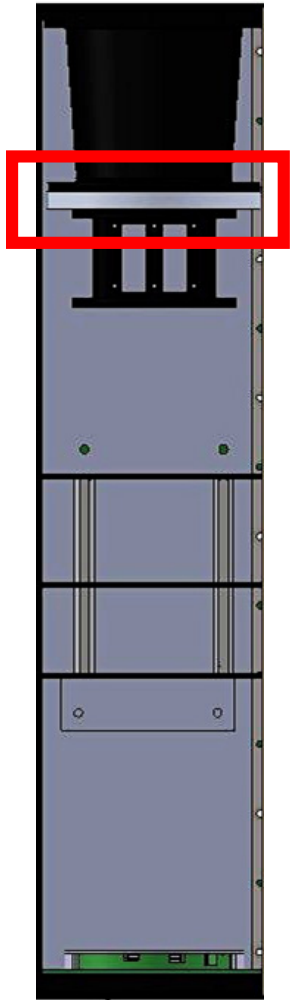
Radiation Micro-dosimeter



Soft X-Ray Telescope

Soft X-Ray Telescope:

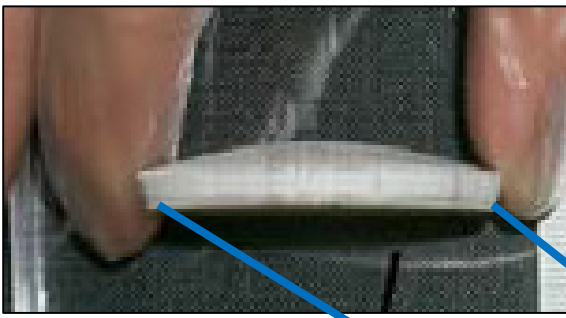
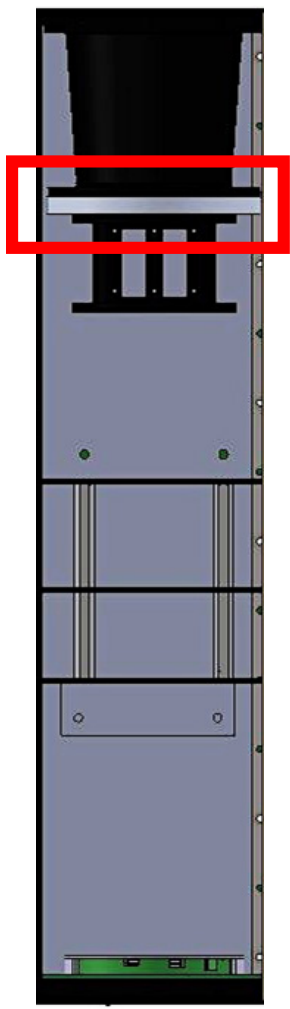
Lobster Eye Optics



Human Made Optics → *Slumped Micro-pore Reflector*

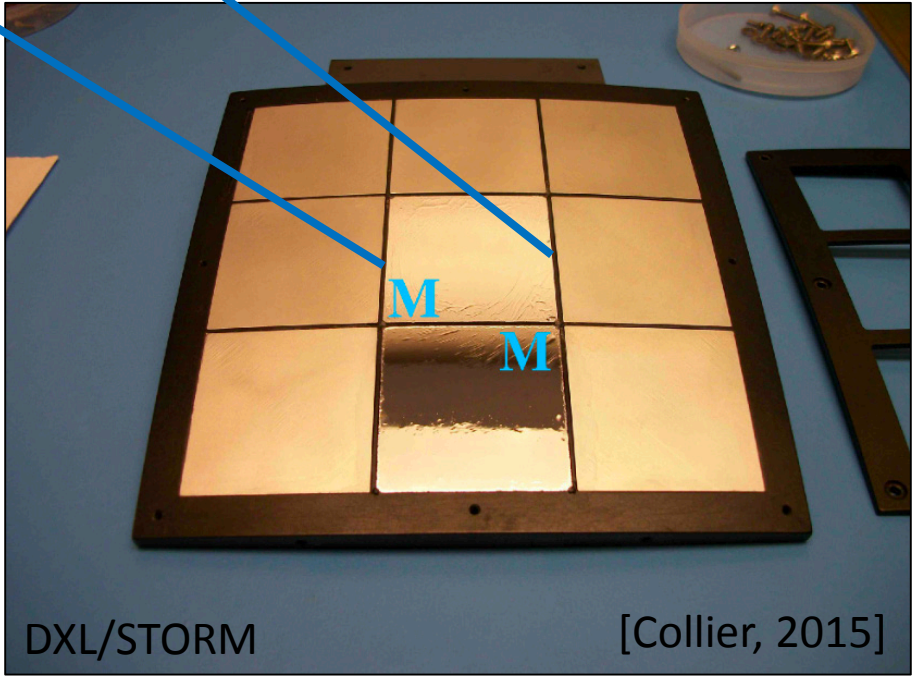
Soft X-Ray Telescope:

Lobster Eye Optics



Micro-Pore Reflector allows for filtering material to be added on top of optic array

Polyimide/Aluminum

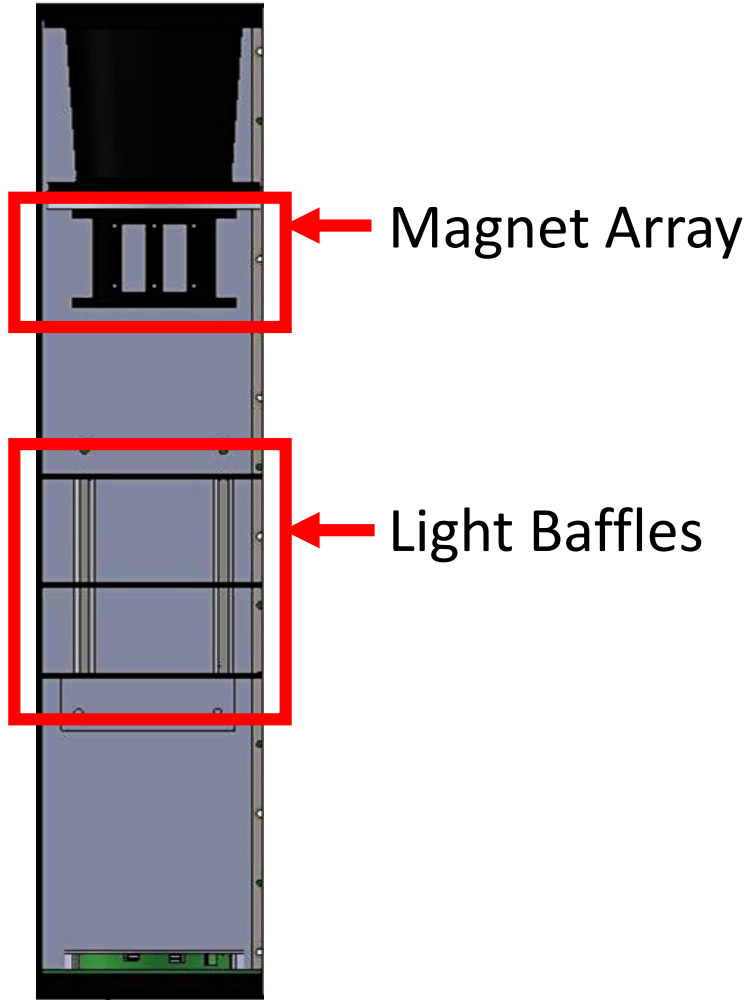


DXL/STORM

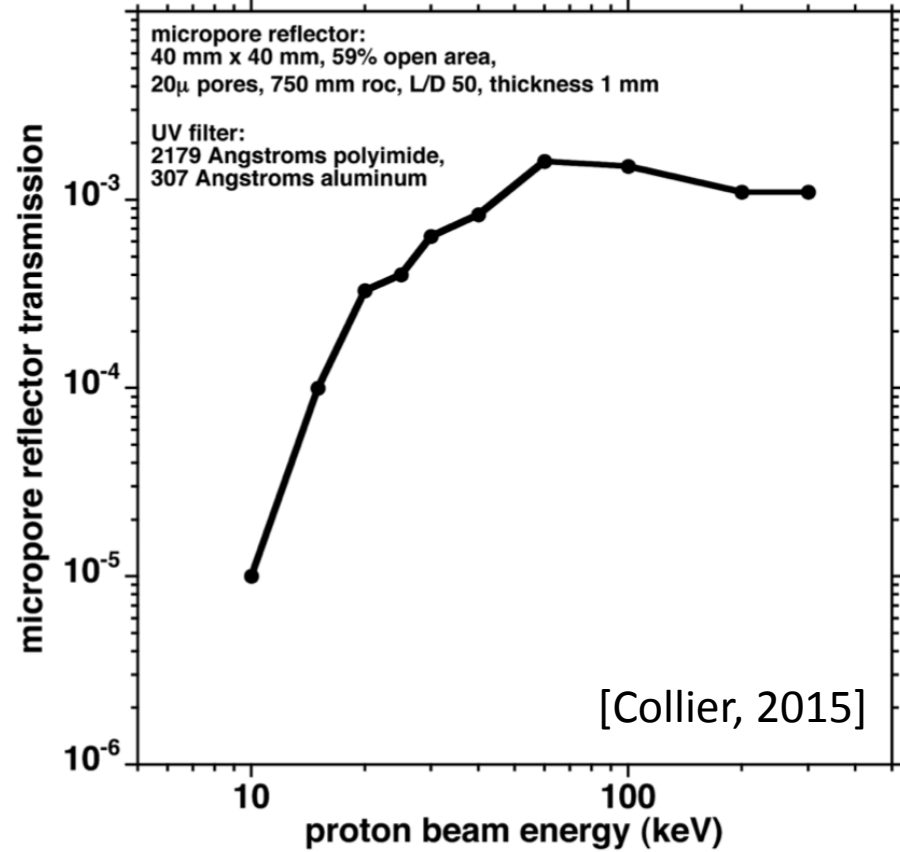
[Collier, 2015]

Soft X-Ray Telescope:

“Magnetic” Optics

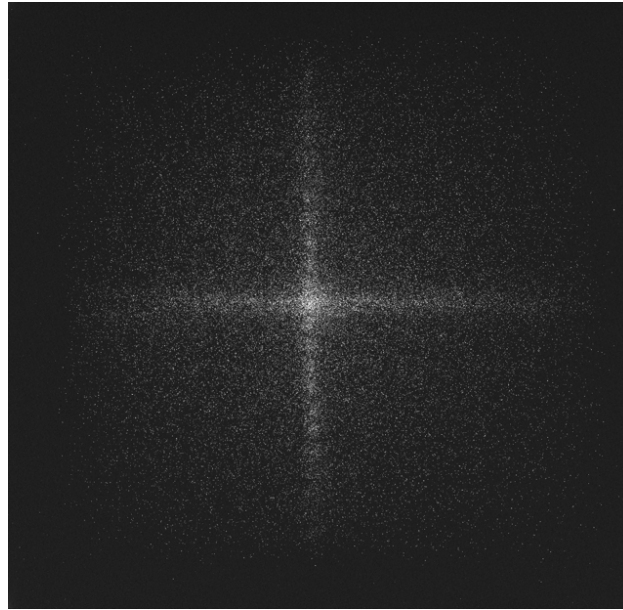
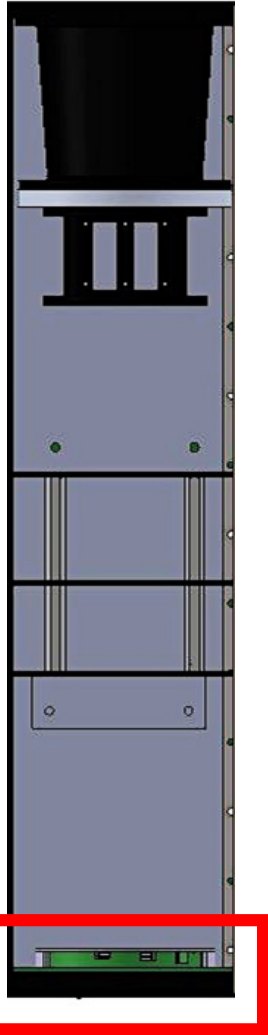


Micropore Reflector Proton Beam Transmission



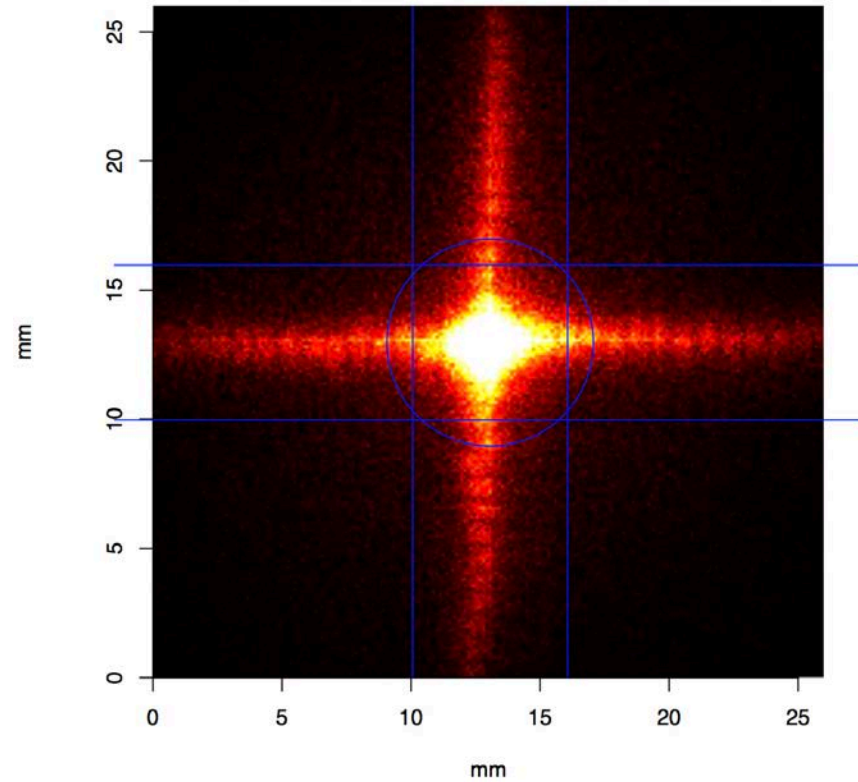
Soft X-Ray Telescope:

Micro-Channel Detector Plate



CuPID First Light 11/04/2016

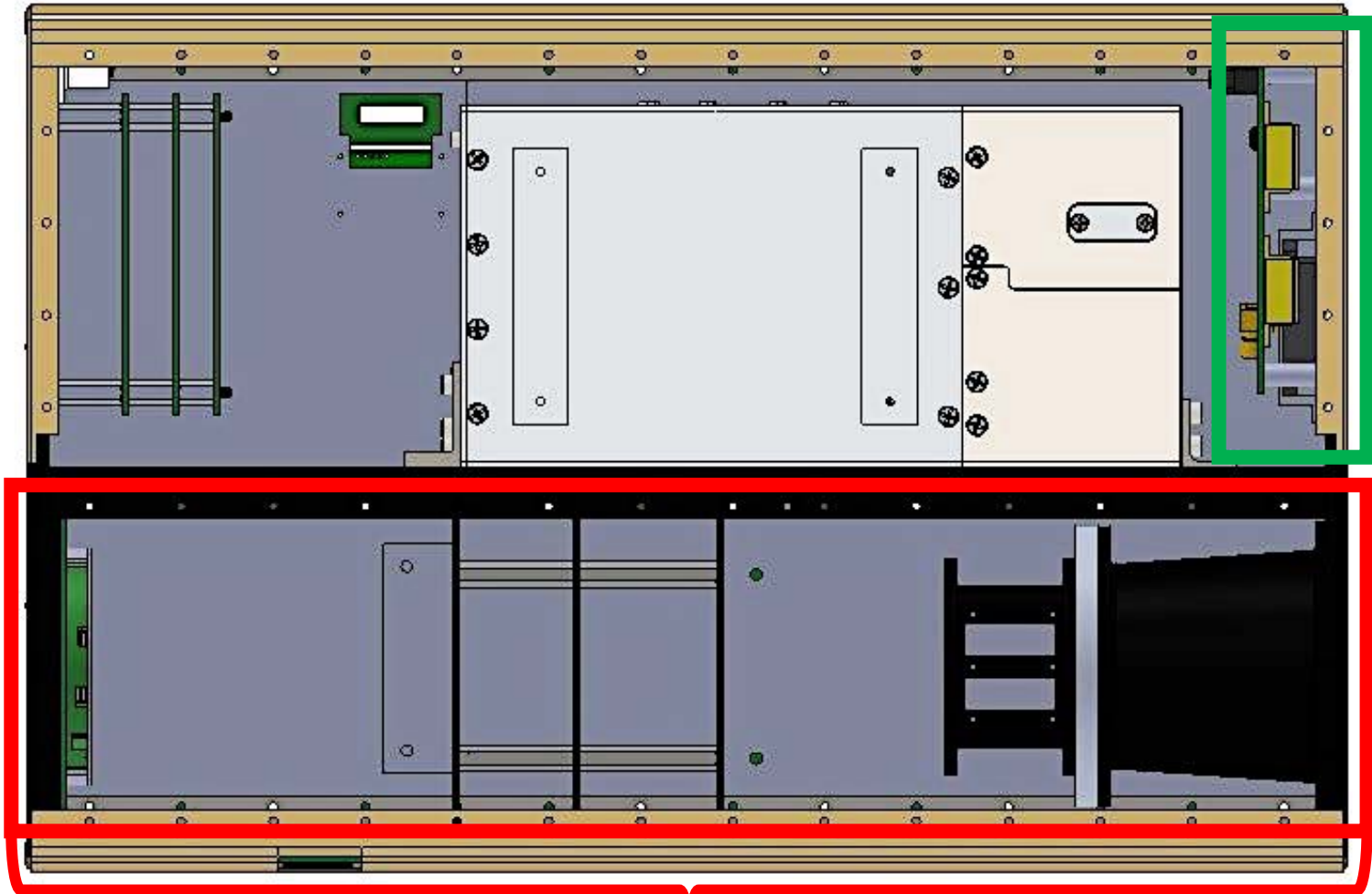
Point Spread Function



Recent Testing 06/13/2018

The 6U chassis houses **two** instrument payloads and a custom avionics system for 3-axis control.

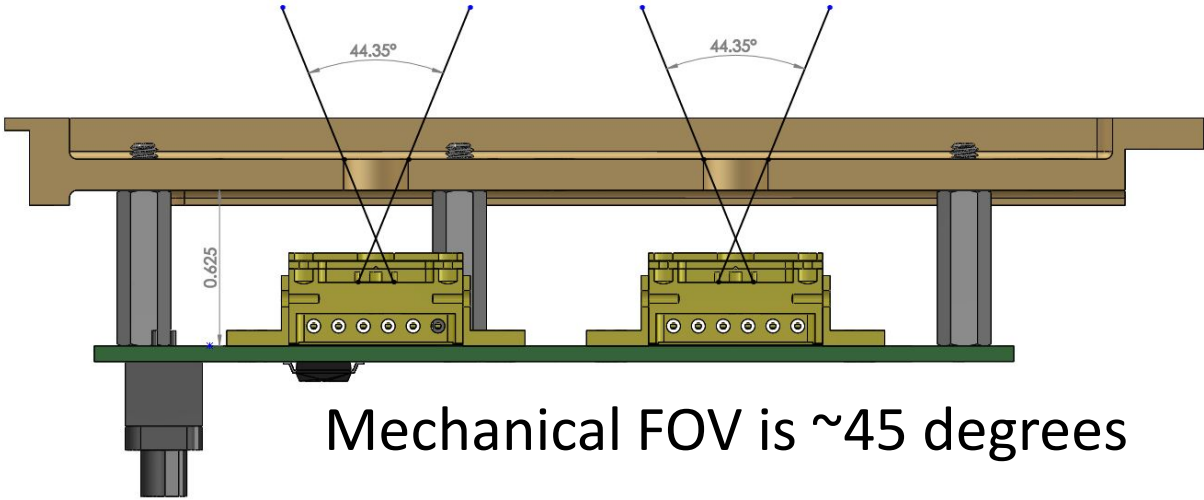
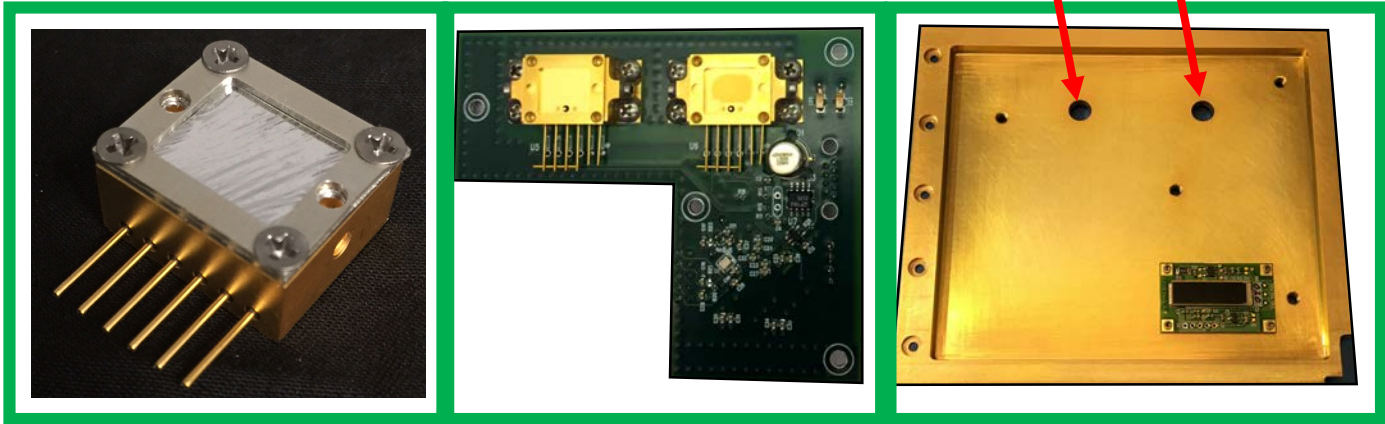
Radiation Micro-dosimeter



Soft X-Ray Telescope

Micro-Dosimeter Suite:

Collimation

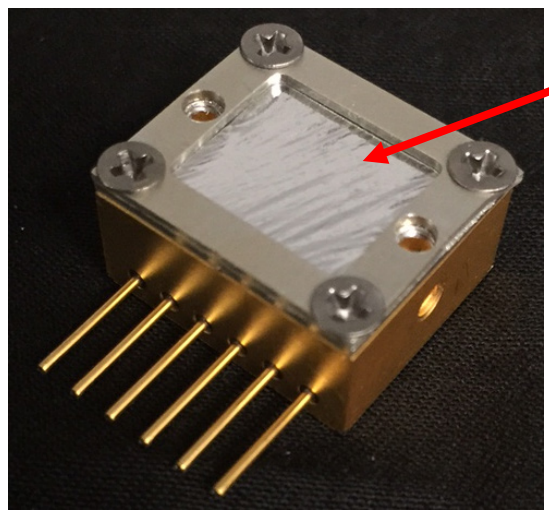


Mechanical FOV is ~45 degrees

Experimental FOV is ~50 degrees
(still undergoing testing)

Micro-Dosimeter Suite

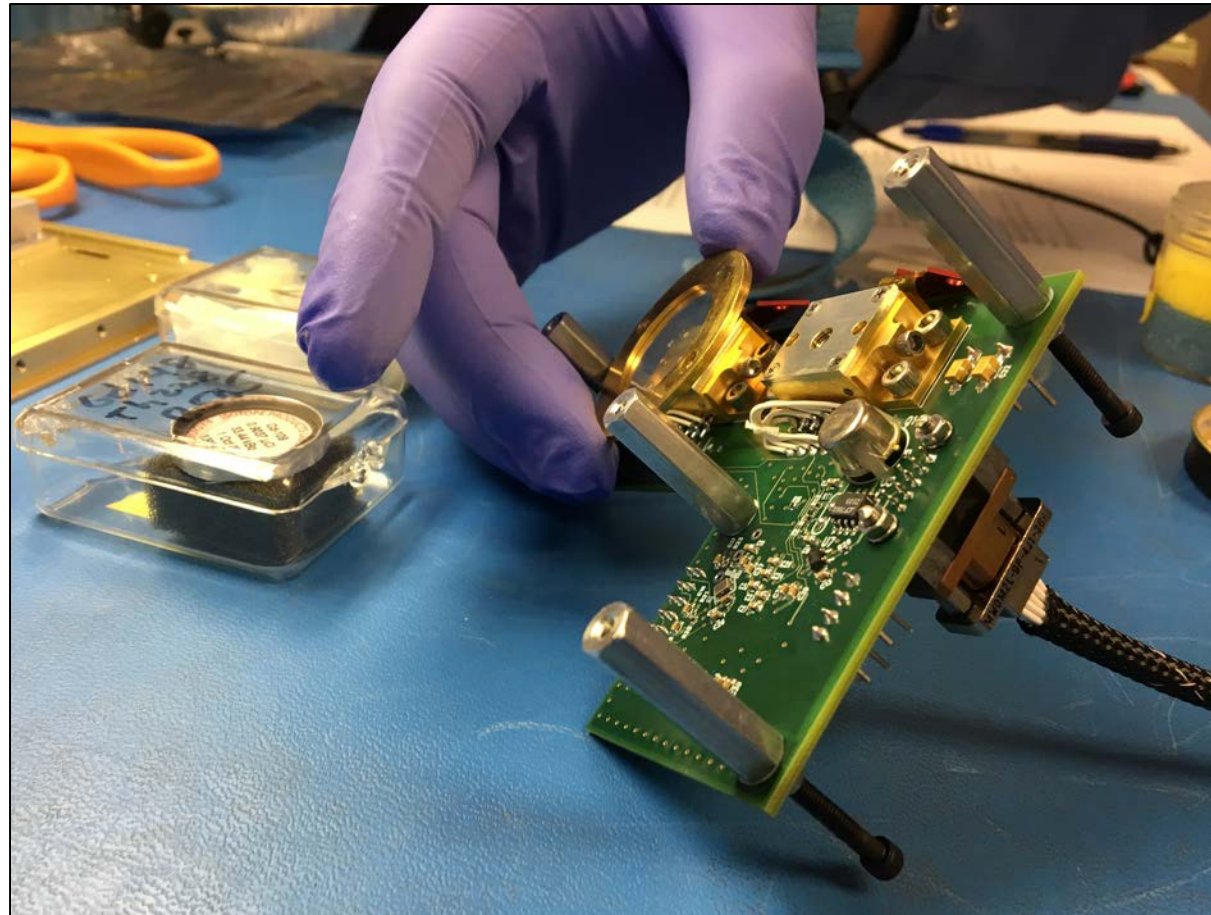
Detection



Foil layer before silicon detector

Dos-A
18 μ m Aluminum
> 50keV Electrons

Dos-B
0.2 μ m Nickel
> 50keV Electrons and Protons



Bench testing at BU

Instrument Heritage

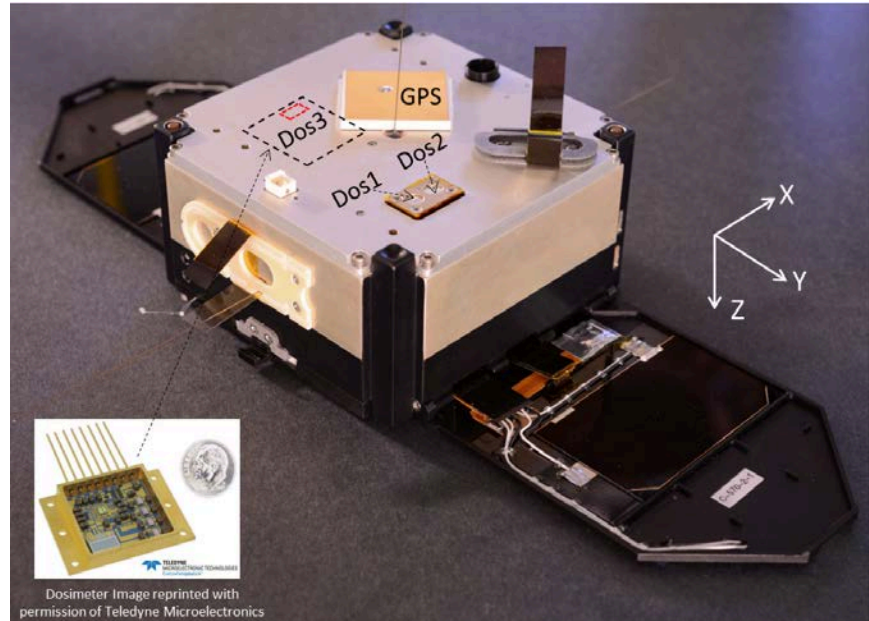
Soft X-Ray Telescope:

DXL Sounding Rocket 2015



Micro-Dosimeters

Aerospace Corp. AeroCube-6



Courtesy of Teledyne Microelectronics

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Questions?

