Asher Goodman

Project Portfolio

Skills: Fusion 360 | CNC Machining | Precision Tolerancing | TVAC Prep | Finite Element Analysis | Experimental Physics

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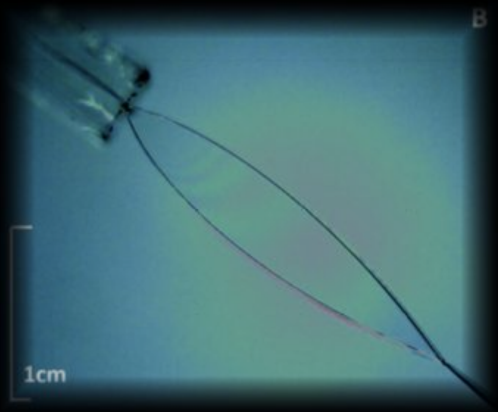
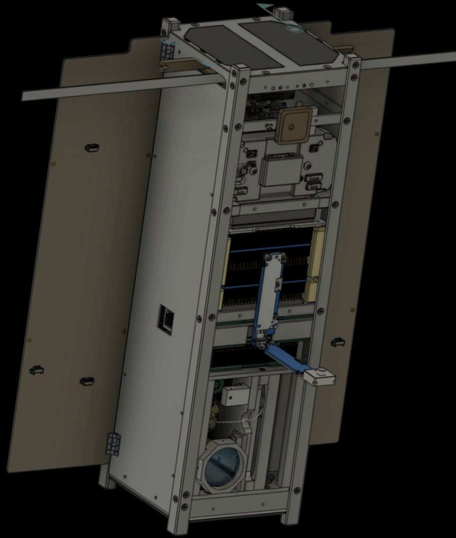
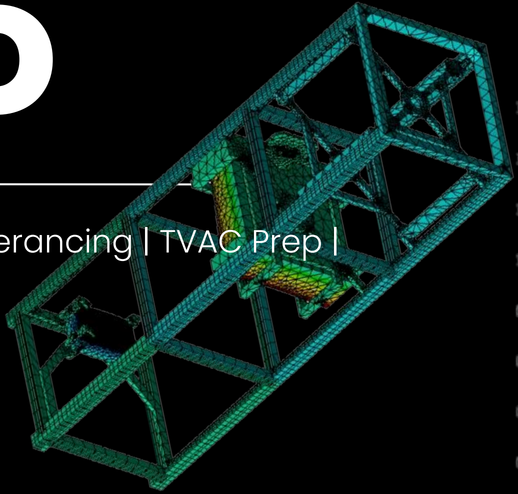
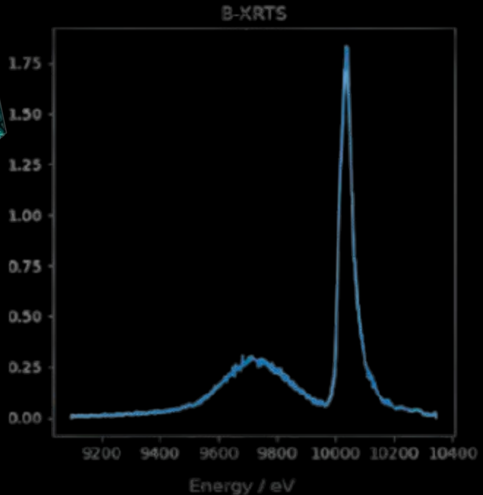


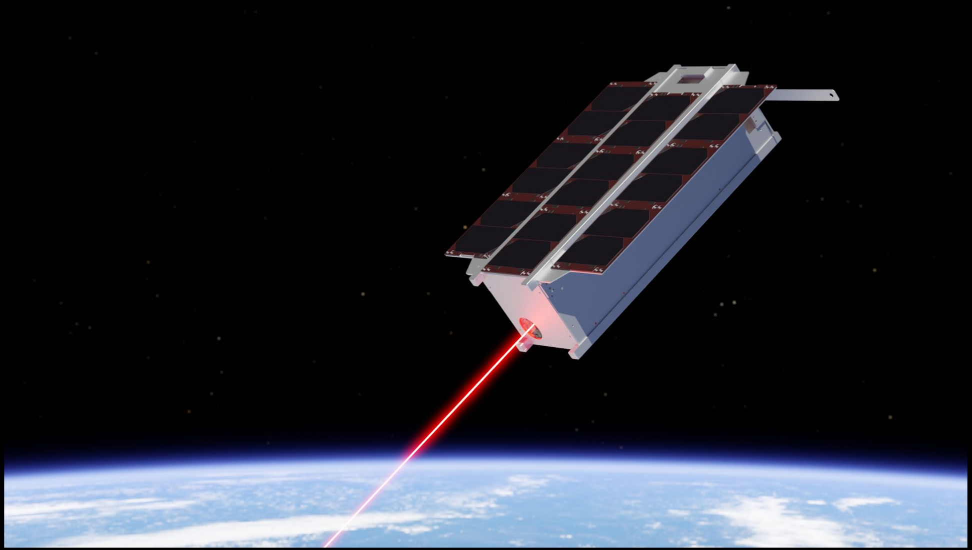






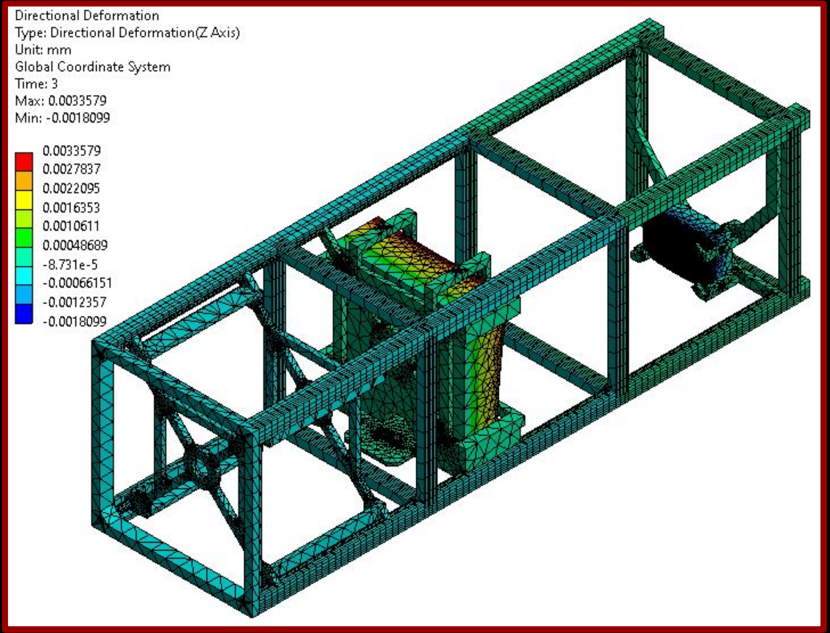
PULSE-A Satellite

- Integrated payload and mechanical interfaces within a 3U bus design
- 3D modelled and constructed thermal vacuum testing rig, which is to be tested at Fermilab
- Goal of becoming the first entirely undergraduate team to establish optical space-to-ground communication
- Project funded by NASA CSLI, and undergoes regular design reviews from engineers from JPL, Fermilab, etc.

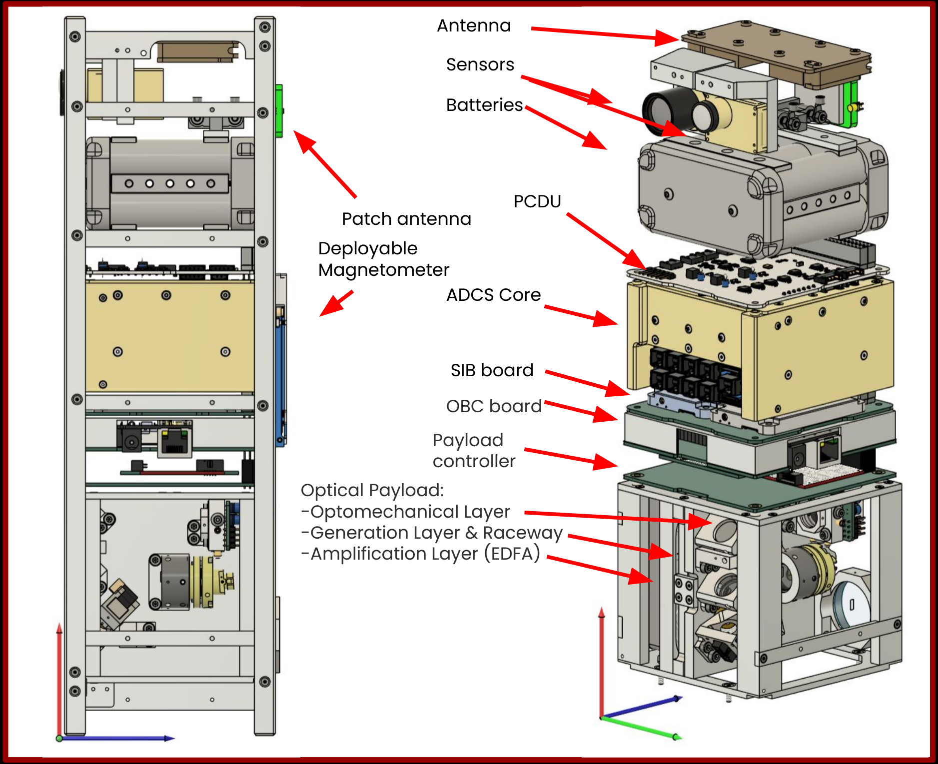


Rendering of deployed PULSE-A CubeSat

PULSE-A Satellite



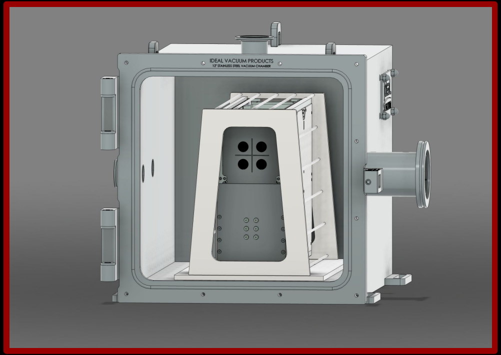
Using Ansys Mechanical to simulate launch vibrations, find natural vibration modes, and perform stress tests on satellite frame

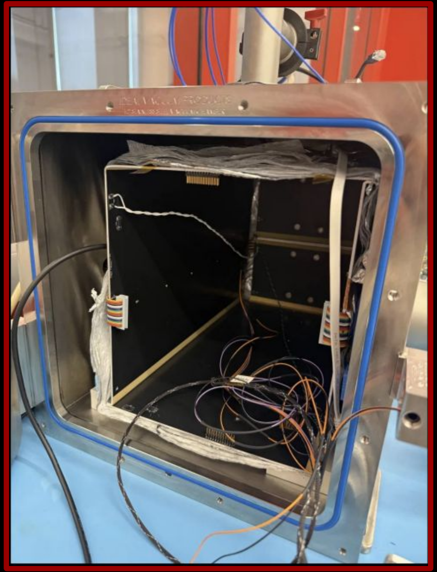


Working on modelling connections between component interfaces

PULSE-A Satellite

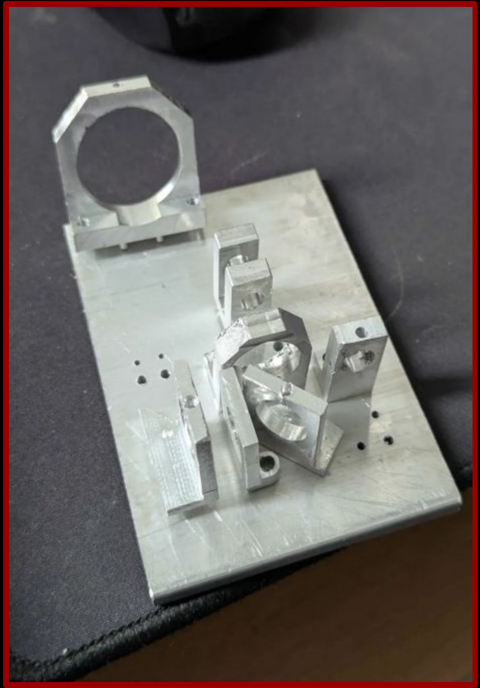
- Worked with thermal subteam to design thermal vacuum testing frame
- Open frame and thin wire-suspenspended design help minimize thermal conduction
- Made of aluminum & PEEK plastic to reduce outgassing
- To be implemented at Fermilab TVAC facility





TVAC to be used at Fermilab

PULSE-A Satellite

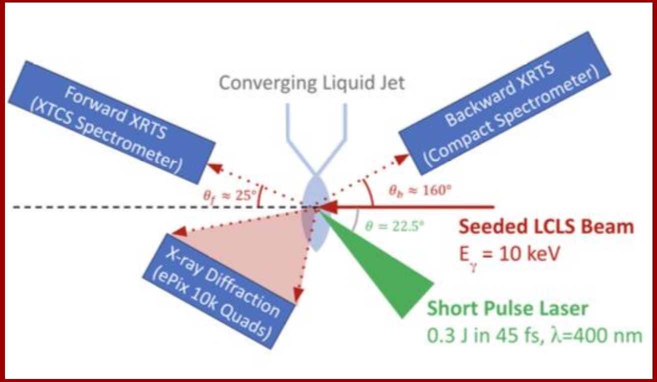


CNC Machining Process

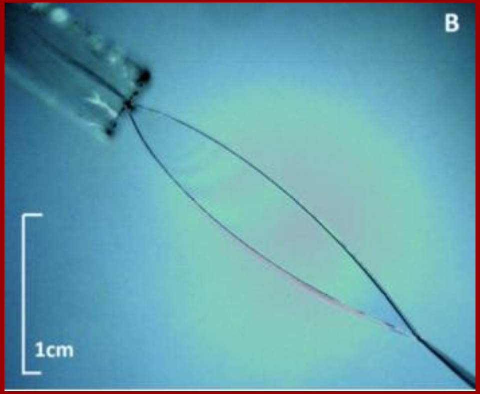
Aluminum frame components and optomechanical layer prototype made with CNC

Inertial Fusion Energy (IFE) Research Intern

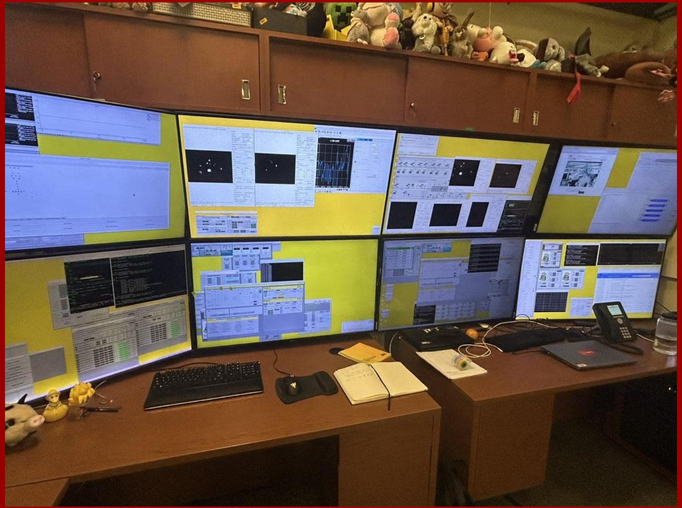
Last summer, I contributed to research in the High Energy Density Science division of SLAC National Accelerator Lab.



Experimental setup: a short pulse laser is used to ionize water jet target. Femtoseconds later, an X-ray beam is fired at the target; its diffraction pattern informs the effectiveness of ionization.

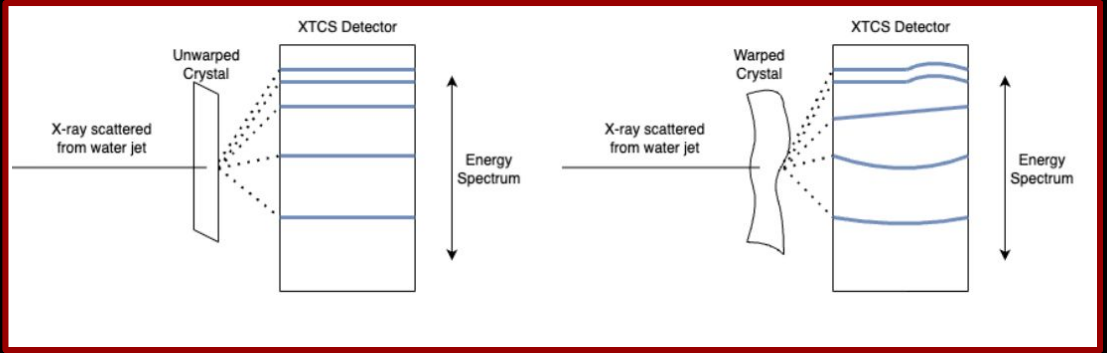


Ultra-thin water jet used as target of high-energy, short-pulse laser. Rapid laser firing replicated necessary irradiation conditions for an effective fusion reaction.

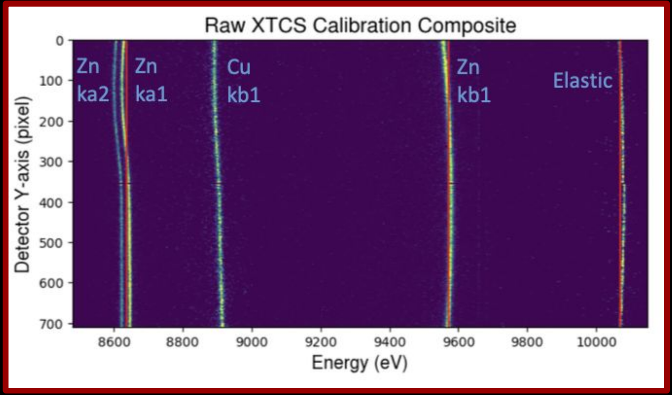


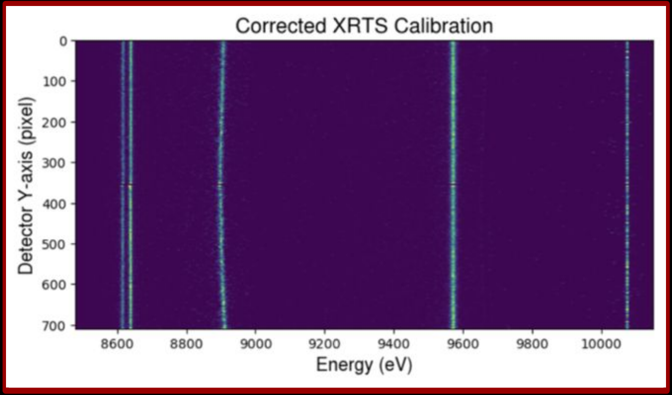
Linac Coherent Light Source data collection center

Inertial Fusion Energy (IFE) Research Intern



Detectors gave significantly distorted results. I worked with experiment subteam to determine this was due to diffraction crystals

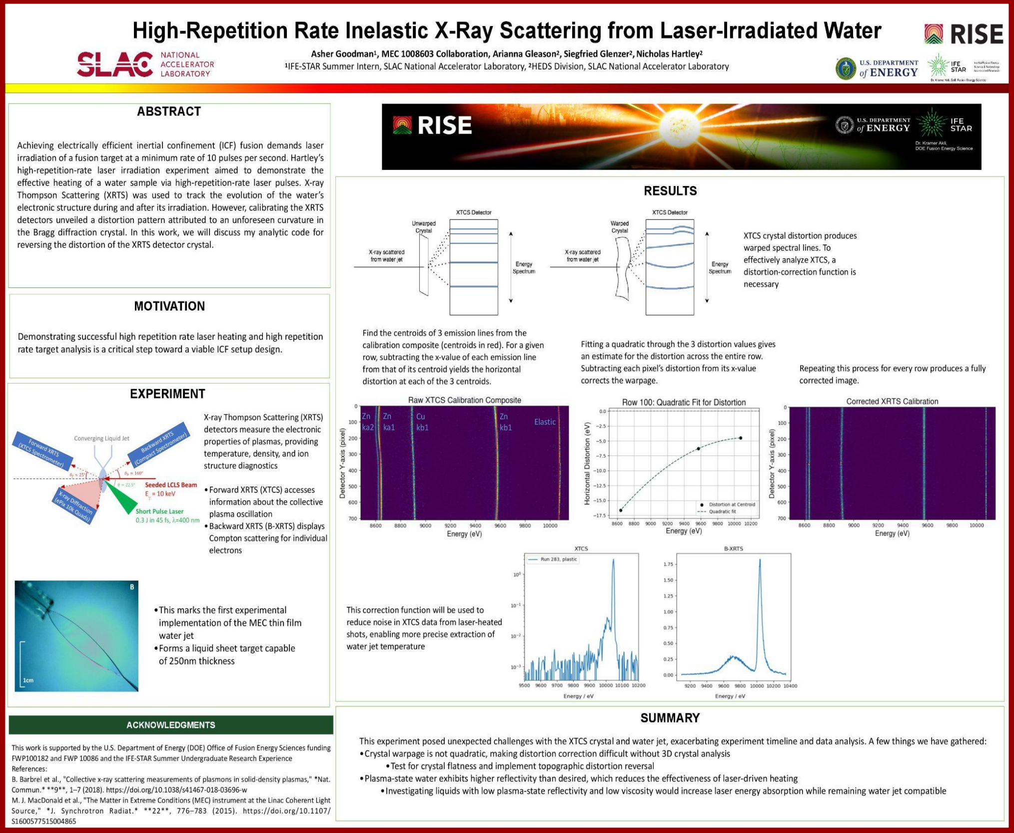




I created a python-based distortion correction function to help dewarp detector images and analyze experimental data

Inertial Fusion Energy (IFE) Research Intern

Presented results at the IFE-STAR Summer Symposium: a national forum for undergraduate nuclear fusion research



New Projects Soon!

Updates posted at https://acgoodman24.github.io/