



*Department of Mechanical  
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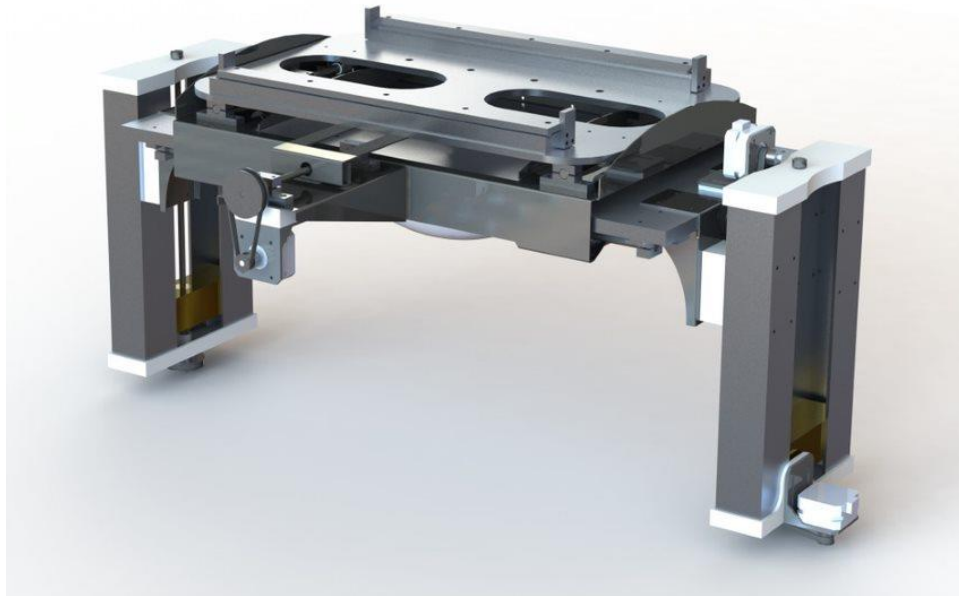
To: David Willy

From: 21-Spr-GA

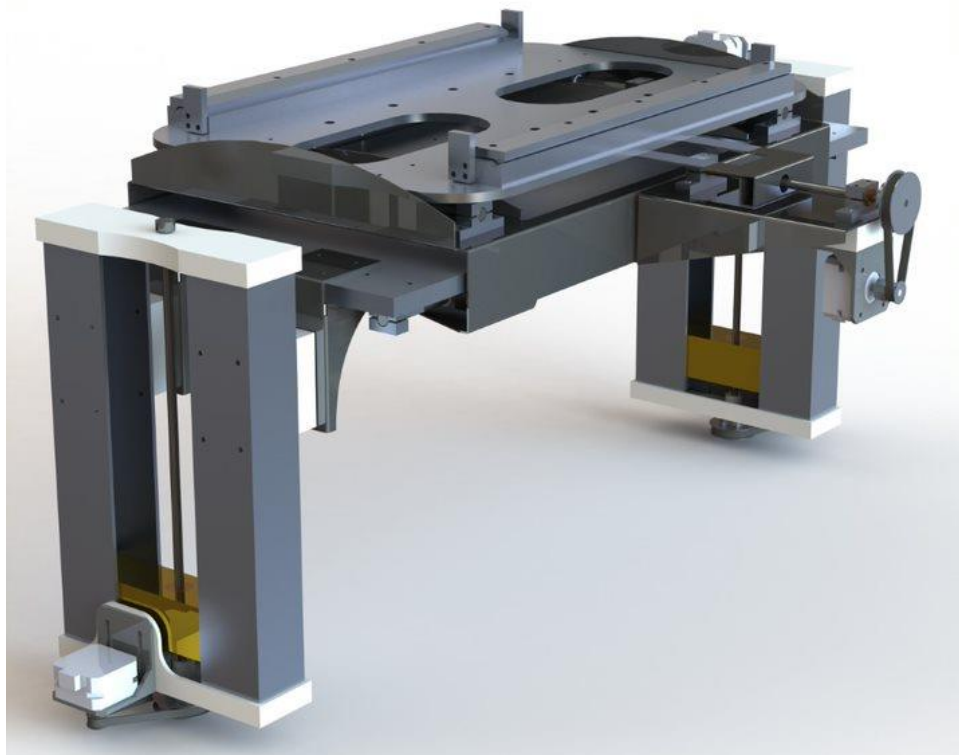
Date: 9/17/21

Re: Hardware Review 1

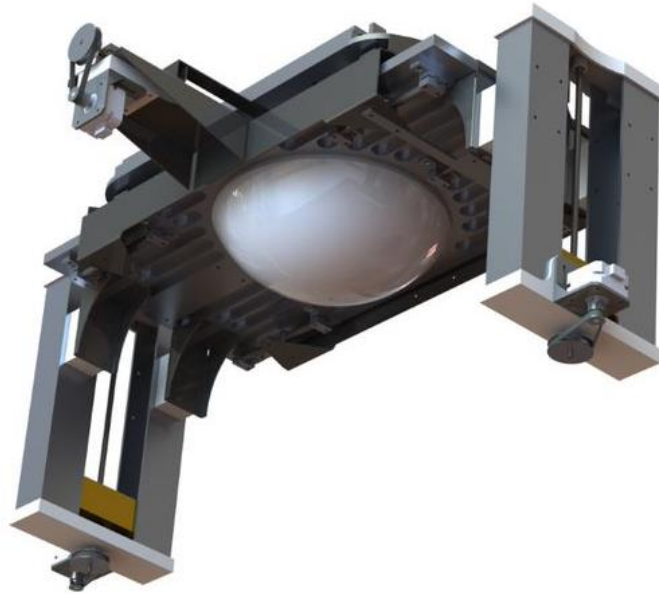
The following memo will detail the current status of the project for the first hardware review. The bearing fixture design has been improved and refined to a great degree. The changes are depicted in figures 1, 2, and 3. They are Computer Aided Design (CAD) assemblies of the current stage of the design. Required parts and materials have been ordered to begin construction of the first full-scale functional prototype. Some parts are currently being machined from existing stock. The more complicated parts to manufacture have also been thoroughly assessed as to how to reduce costs where possible, while still maintaining a functional and professional product. Specifically, the weights have been changed. Their orientation was altered to require less materials to utilize them. The change is illustrated in figure 4. As a result, the team has yet to fully construct a prototype this semester, although many parts have been reworked to improve manufacturability. These improvements are due to frequent contact with various manufacturers. The team expects the prototype to be completed within the next three to five weeks; that timeline is dependent on the arrival of the purchased parts. This iteration should illuminate any areas for improvement in the existing mechanical design. It will also provide a valuable testing platform as work moving forward focuses on the development of the electrical and control systems. Even though the primary aim of this prototype will be by the mechanical components, the team allocates resources to researching and preparing software. This was done to make sure the transition between focuses is accomplished smoothly. The hope is to be able to test this system as soon as it is assembled and functional. To that end, additional thought has been put into the best methods to replicate the exact weight, dimensions, and center of mass of the actual satellites. Another innovation the team wants to accomplish is to create a user-friendly interface coupled to the device. The interface will instruct the user on any action required to operate the system and give feedback about the accuracy of measurements.



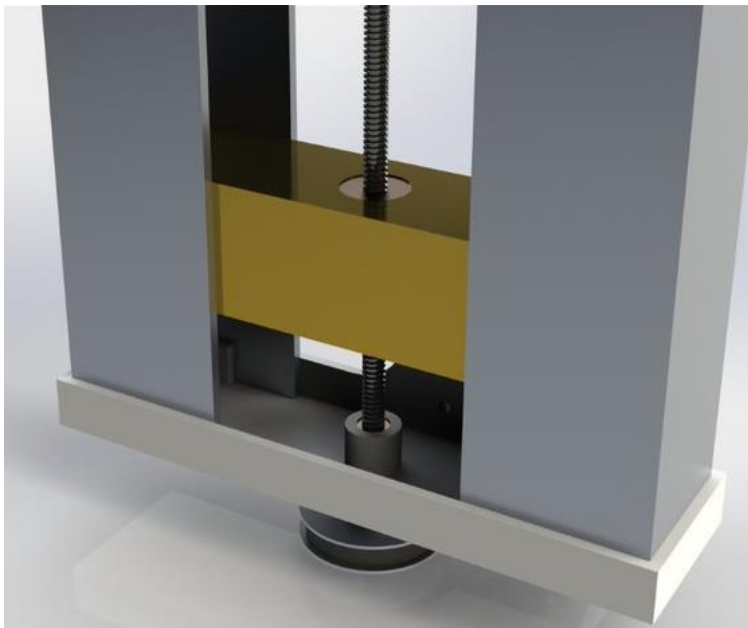
*Figure 1: Prototype CAD assembly, view 1*



*Figure 2: Prototype CAD assembly, view 2*



*Figure 3: Prototype CAD assembly, bottom view*



*Figure 4: Y-axis weight adjustment system*