CUBE SATELLITE ENVIRONMENTAL SIMULATOR

FINAL DESIGN PRESENTATION

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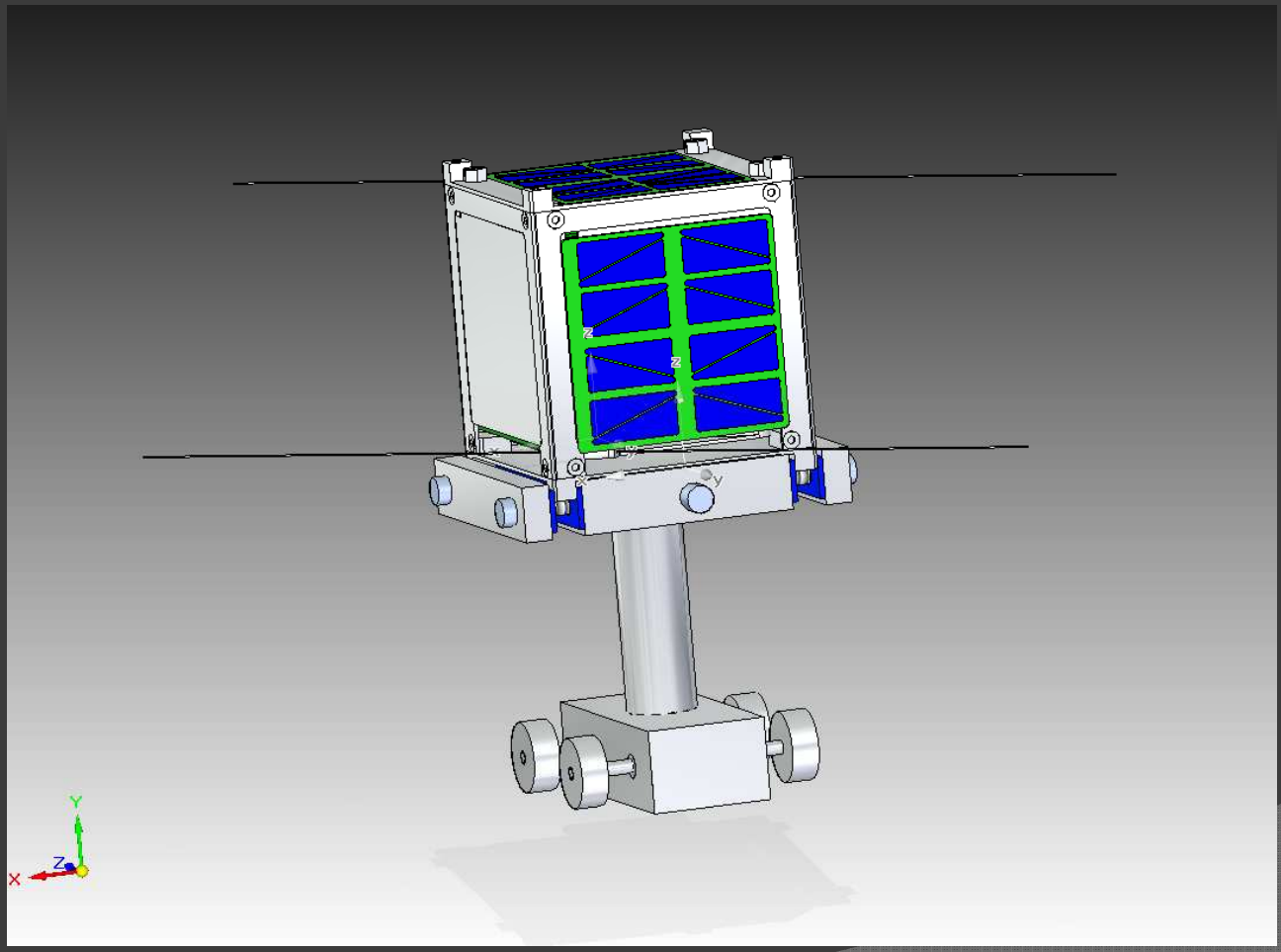
Mission Objective:

Our goal is to design and build a simulator that can reproduce the sun and earth as a source of radiation and rotate the cube satellite about multiple axes in order to determine the amount of power it receives from the solar cells over time.

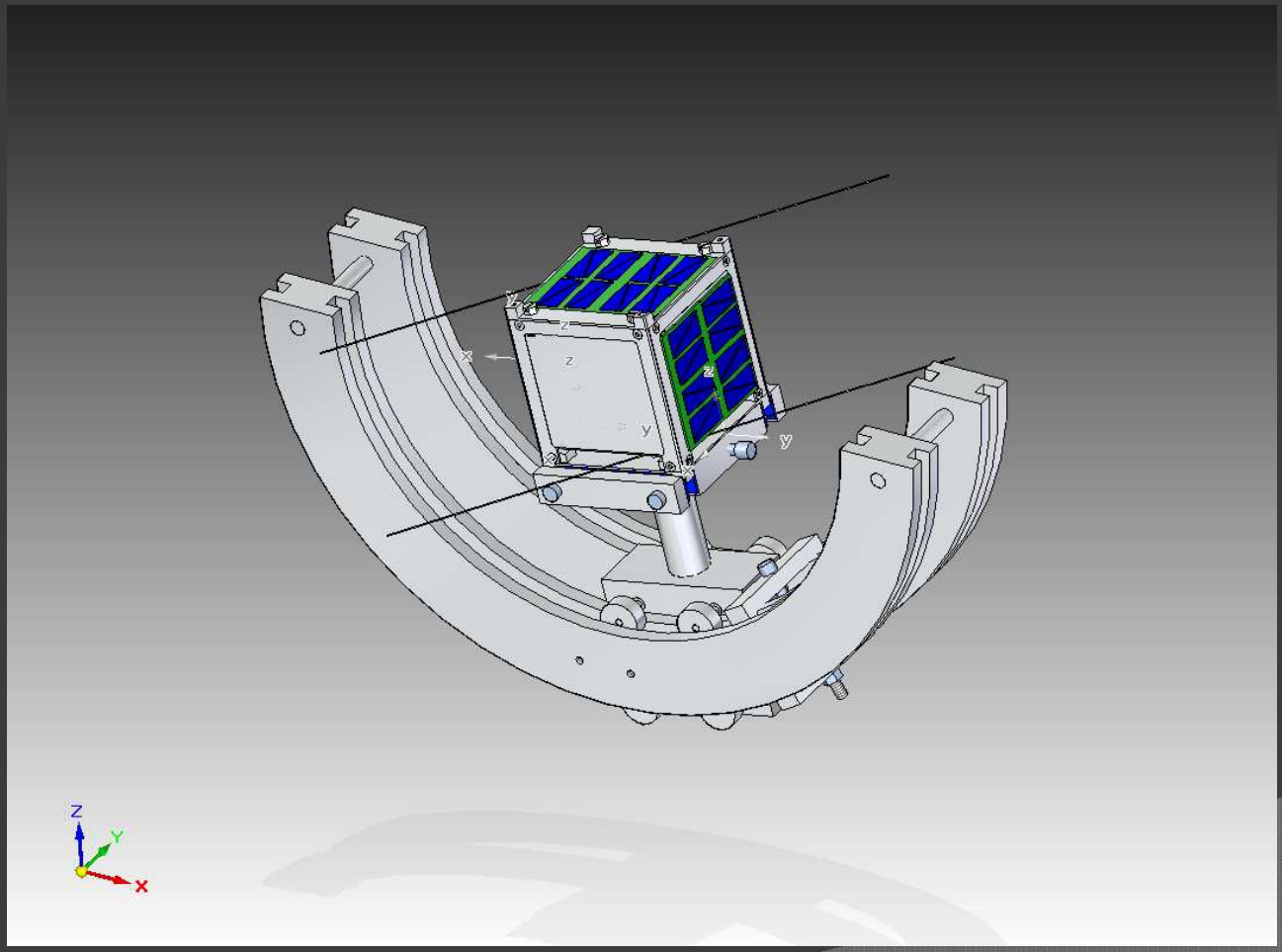
REQUIREMENTS

- Rotate satellite about multiple axes at a speed of 1-5 rpm
- Produce a light source with the same spectrum and intensity as the sun
- A reflective surface to represent the albedo of the earth (30%)
- No spurious light reflections
- Ideally fit into an anechoic chamber

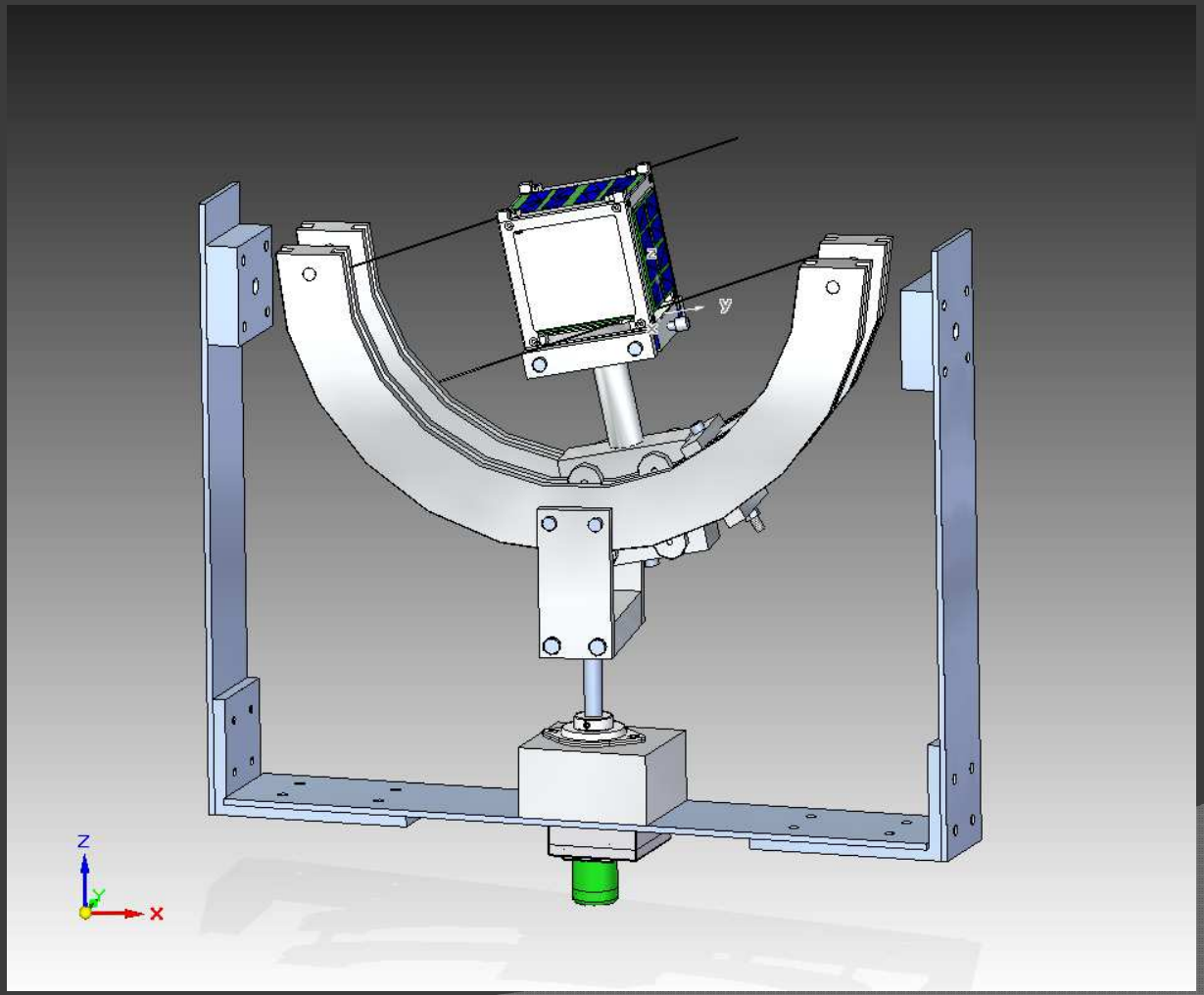
CART+CLAMP



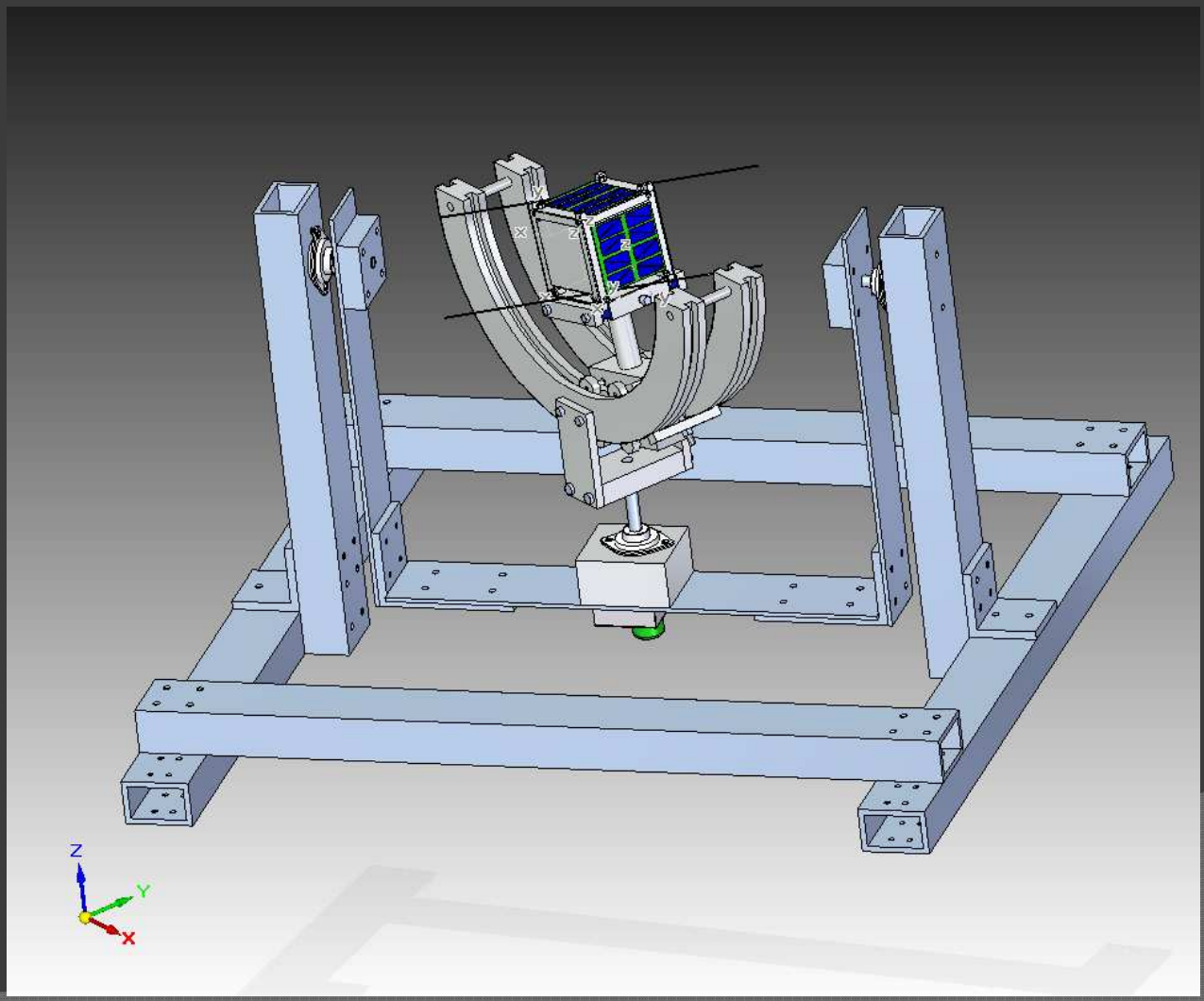
TRACK+CART



SWING+



MECHANICAL SYSTEM



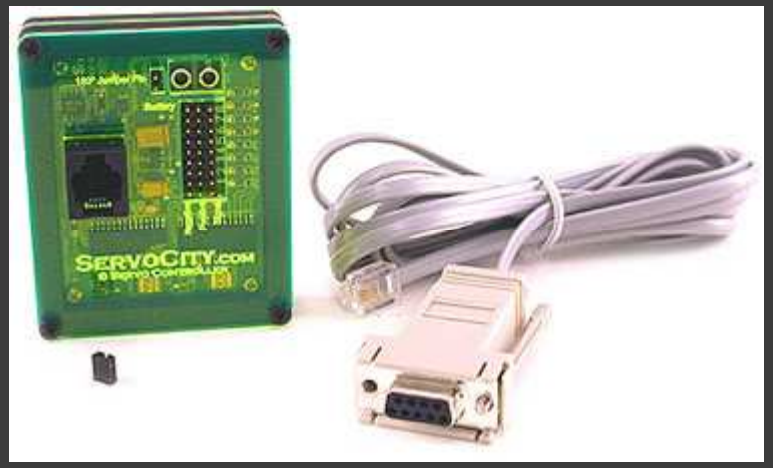
MOTOR

- We'll be using a DC Dayton Gear Motor (12V)

RPM	Torque	Current	Price
	oz.in	Amp	$
8.75	656	1	39.99

COMPUTER INTERFACE

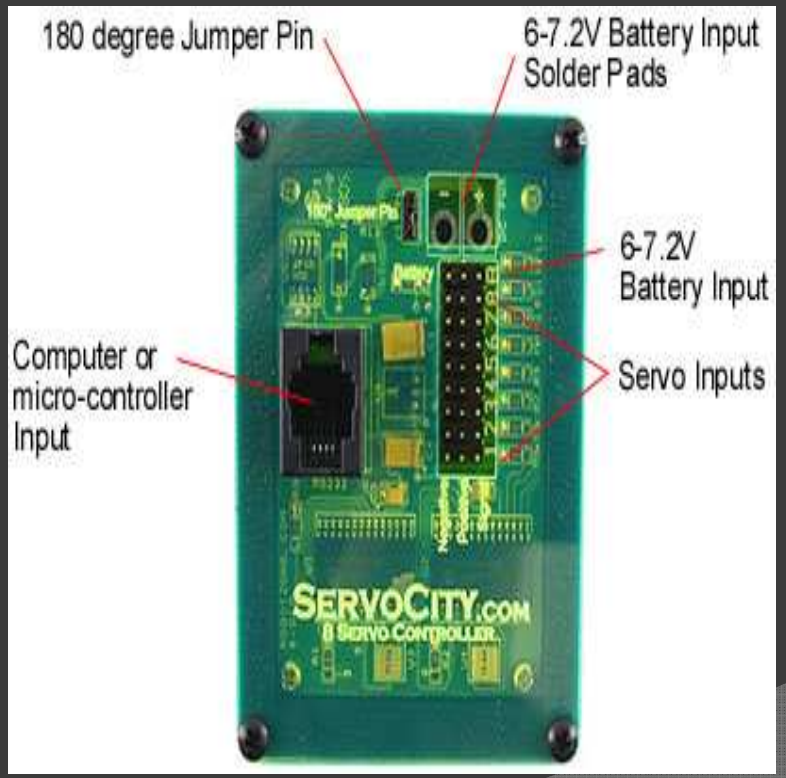
Controller



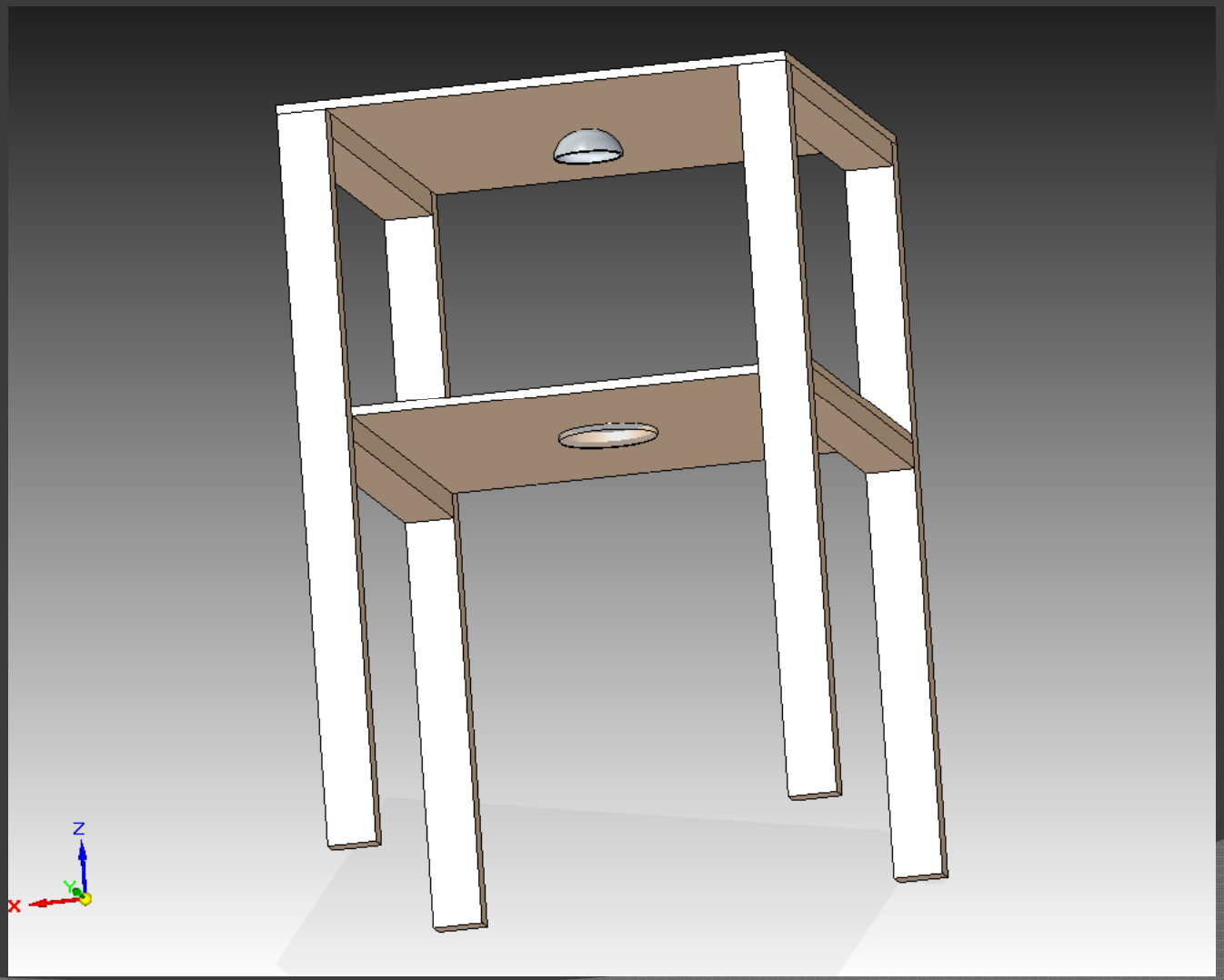
Visual

This system allows us to control the motor speed

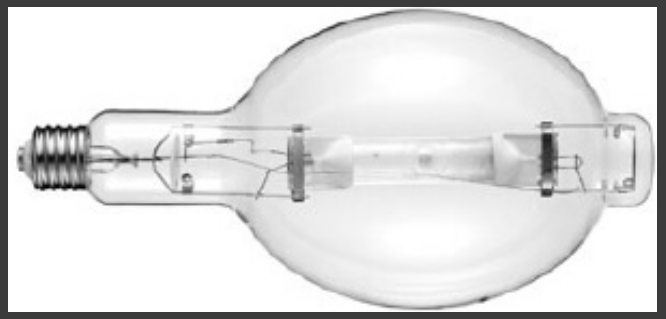
Position Control



SOLAR SIMULATION



ALBEDO SIMULATION



- This bulb will be mounted to the base frame at a distance of 23 in from the cube.

CONCEPT OF OPERATION

- Secure the Cubesat into clamp
- Orientate system to desired orientation using clamp, cart/track, and swing
- Set DC motor to desired rpm
- Turn on light sources

BILL OF MATERIALS

Company	Price($)
McMaster	83.15
Best Science	23.98
Speedy Metals	220.69
Servo City	234.96
Emdund Optics	179.35
Eye Light Int.	80
1000 Bulbs.com	123.44
HID Hut	3
Bolt Depot	63.8
TOTAL	1012.37
TAX	1093.3596