Austin Williams
EE Masters Student
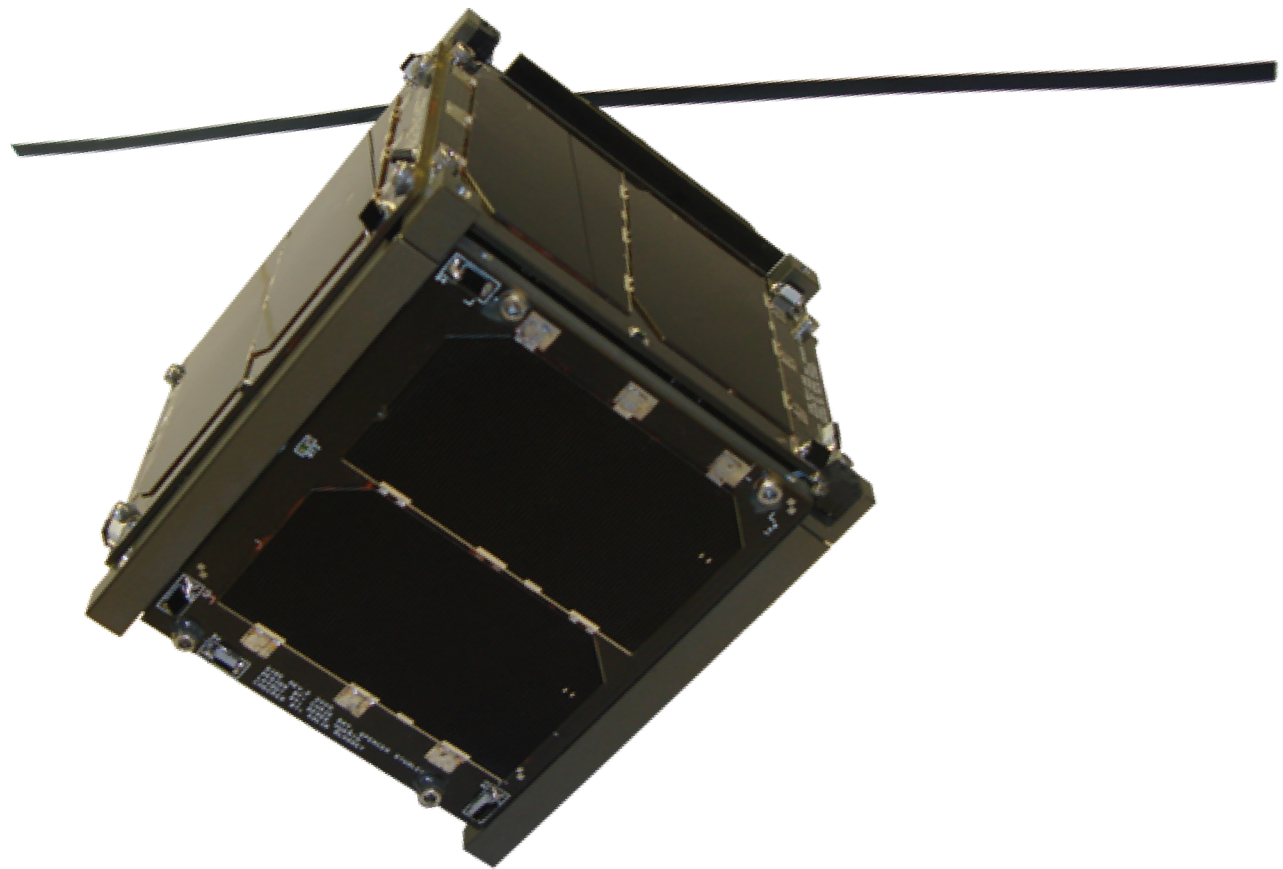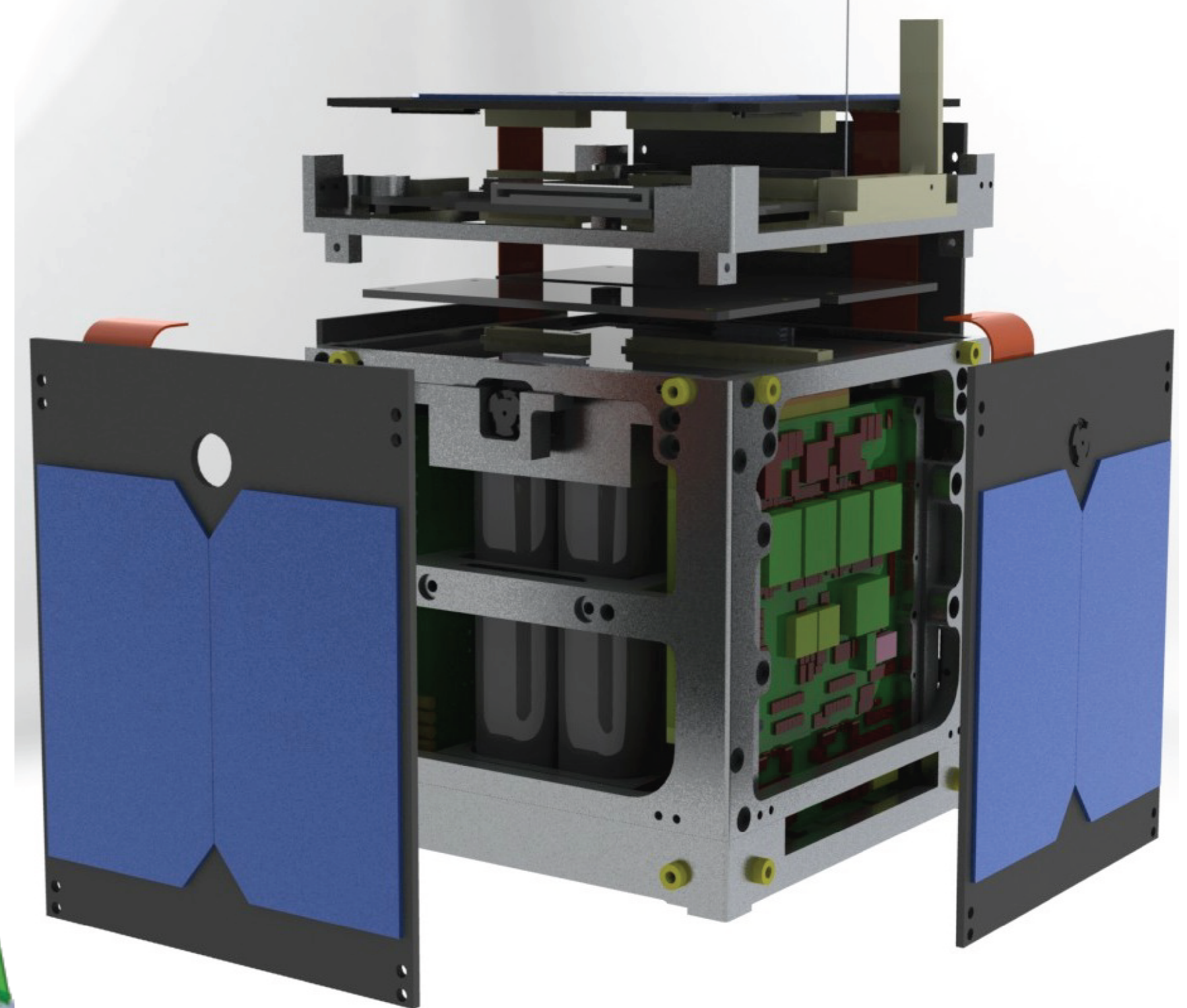Cal Poly, SLO

PolySat

CP6 - Old Bus

The primary mission of CP6 is to implement an attitude control system using only magnetic torquers embedded within the side panels. Attitude determination will be performed using the two axis magnetometers on each side panel. CP6 also contains a NRL-designed electron collection experiment. CP6 has since de-orbited naturally.

CP7

The CP7 mission implements a payload designed to characterize particle dampers in zero-gravity conditions. Particle dampers are mechanical damping devices that consist of an enclosed cavity filled with particles. When subjected to vibration, the momentum exchanges and frictional forces of the particles create a damping effect that can be optimized to suit a number of applications over a broad frequency and amplitude range.

Lightsail

The Planetary Society is funding a solar sail demonstration named LightSail-1. Cal Poly is designing a new avionics system for the satellite, while Stellar Exploration is responsible for the overall system design, including the mechanical deployment of the solar sail and the on-board ADCS. The mission will deploy a sail around 32 square meters in area, and measure the resulting acceleration.
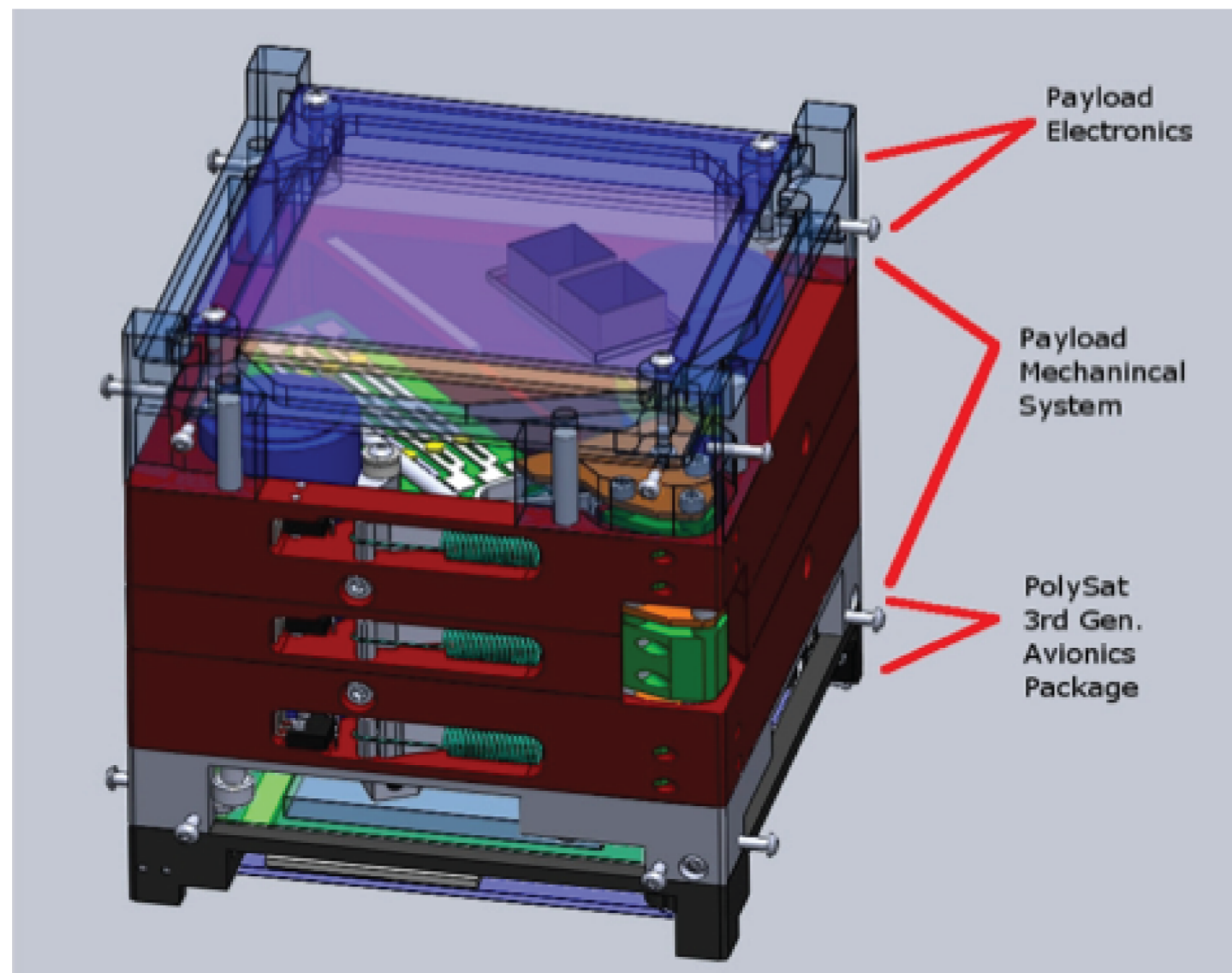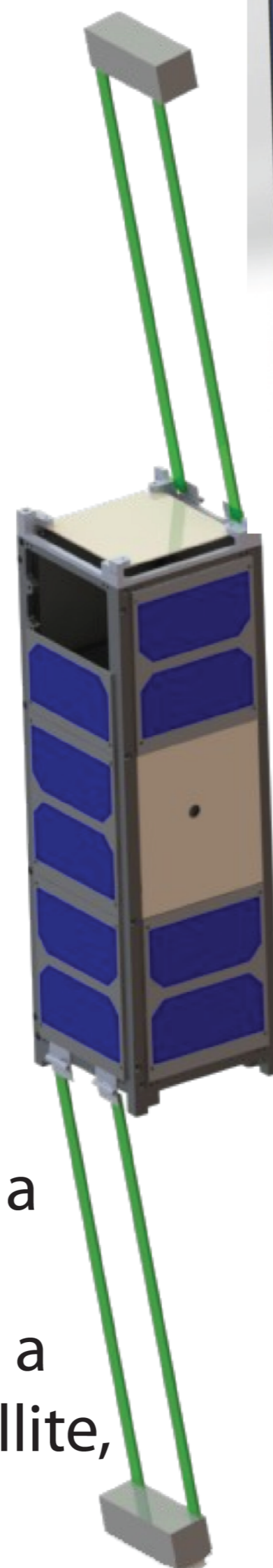

CP8 - IPEX

The primary mission of the IPEX CubeSat is to flight validate various Intelligent Payload Module (IPM) technologies including autonomous onboard instrument processing, downlink operations, and automated ground operations. The technology components to be validated include the SpaceCube-Mini, an advanced flight processor (provided by GSFC) and onboard processing and autonomous operations software (provided by JPL). This flight validation will mature onboard processing hardware and software technologies to reduce risk for the proposed HyspIRI Intelligent Payload Module - a capability to reduce data downlink on the order of 20 times for low latency products and to enable future missions to utilize heritage X-band Direct Broadcast downlink capability. Launch Q3 2013.

CP10 - ExoCube

EXOCUBE is the latest NSF funded space weather CubeSat and is a collaboration between PolySat, Scientific Solutions Inc. (SSI), the University of Wisconsin, NASA Goddard and SRI International. The 3U will carry a mass spectrometer sensor suite, EXOS, in to low Earth orbit (LEO) to measure neutral and ionized species in the exosphere and thermosphere. EXOCUBE will provide the first in-situ global neutral density data since the era of the Dynamics Explorer 2 (DE-2) satellite (1981-1983), including the first direct measurements of [H] using the mass spectrometer technique. Launch Q1 2014.