

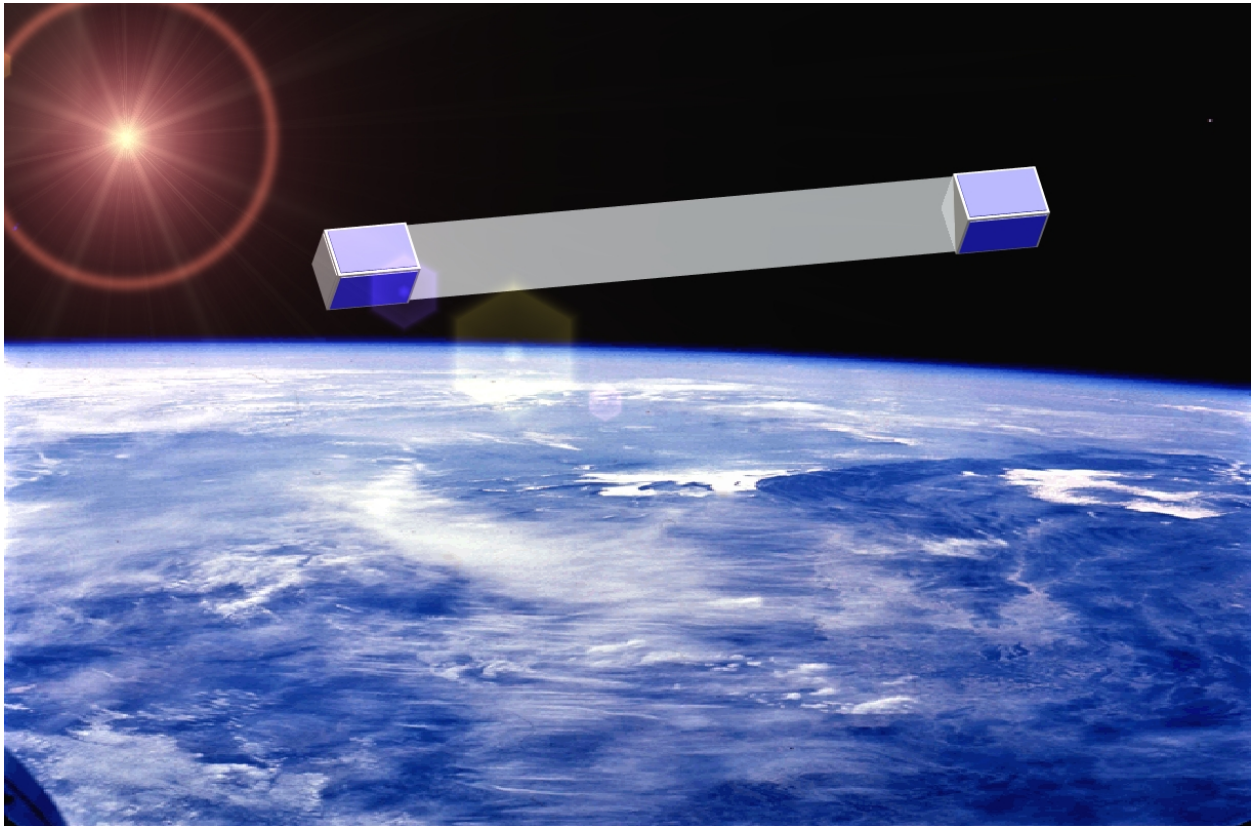
ESMD Summer Internship Program

Project Title: CubeSail Solar Sail Flight Experiment

Project Description with Illustration:

CU Aerospace (CUA) of Champaign, IL and the University of Illinois Department of Aerospace Engineering have won a NASA contract for the design, sub-component fabrication and preliminary test of an UltraSail "Cubesat" 20 m² solar sail spacecraft leading to a flight test in low Earth orbit. The complete flight test program consists of: preliminary design and sub-component tests; fabrication and assembly of a University of Illinois Cubesat spacecraft bus adapted to solar sail deployment; spaceflight qualification testing; and the flight test. The proposed innovation will demonstrate a scalable flight test in a 3 kg package of a high performance 200 m long solar sail plus two Cubesats to achieve a solar sail areal density of 5 gm/m², and a large cost reduction factor for flight test of advanced solar sails. Successful development of the UltraSail solar sail will enable very high energy inner heliosphere and interstellar scientific missions with large scientific payloads. In addition, near-earth missions, such as Heliostorm for early warning of solar storms, will provide more warning margin as the solar sail performance is increased with UltraSail technology.

The NASA Space Grant intern will work with the CUA/AE team, either on the system design or on a sub-component experiment.



Student Background:

Academic requirements: GPA > 3.50

Majors accepted: Aerospace Engineering, OR Electrical and Computer Engineering

Skills Required: Some laboratory or machine experience, OR familiarity with computer programming and some numerical techniques, OR circuit design

Year in school: preferably a Junior or Senior

Advisor and email address:

Dr. David Carroll, carroll@cuaerospace.com, will be the CU Aerospace Internship Director.

The student may also contact Prof. Rodney Burton rburton@illinois.edu or Prof. Victoria Coverstone ycc@illinois.edu, both of whom will be working on this program effort.