

# SATLASS

Satellite Autonomous Launch and Assembly



## The World's Most Advanced CubeSat Deployer

### Introduction

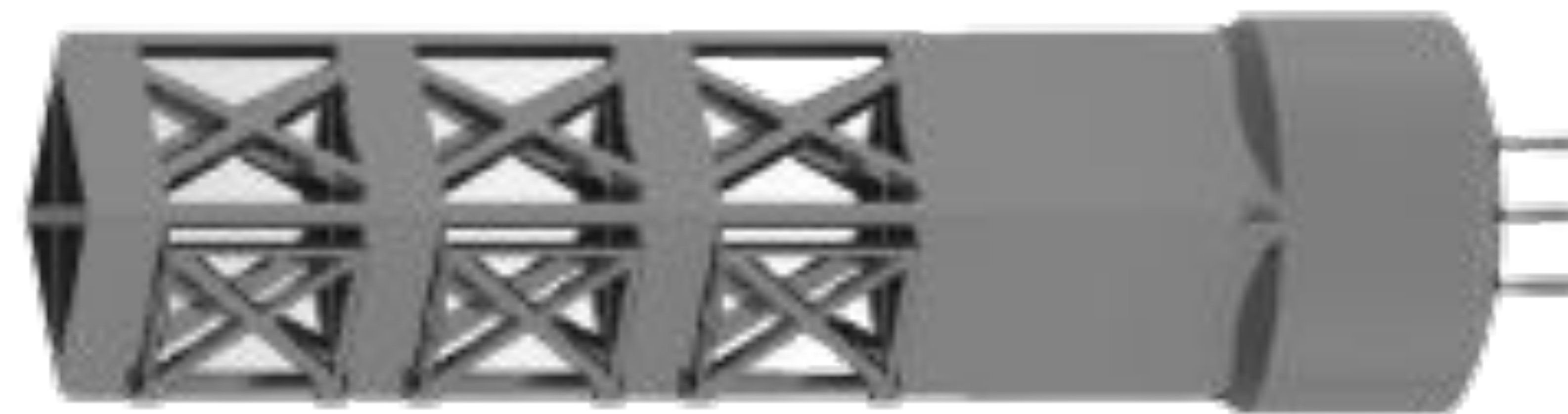
- First CubeSat deployer capable of deploying at multiple orbits
- Features a cold-gas thruster system
- Can deploy up to 3 1U CubeSats
- CubeSats are miniature satellites composed of Units (U's).
  - 1U measures approximately 10x10x10 cm

### ERORA Executive Officers

**President:** Jackson Lamb | **Vice President:** JT Lozano

**SATLASS Lead:** Akshay Kaundinya

**Club Advisor:** Professor Sean Crouse



SATLASS Structure

### Deployment Mechanism

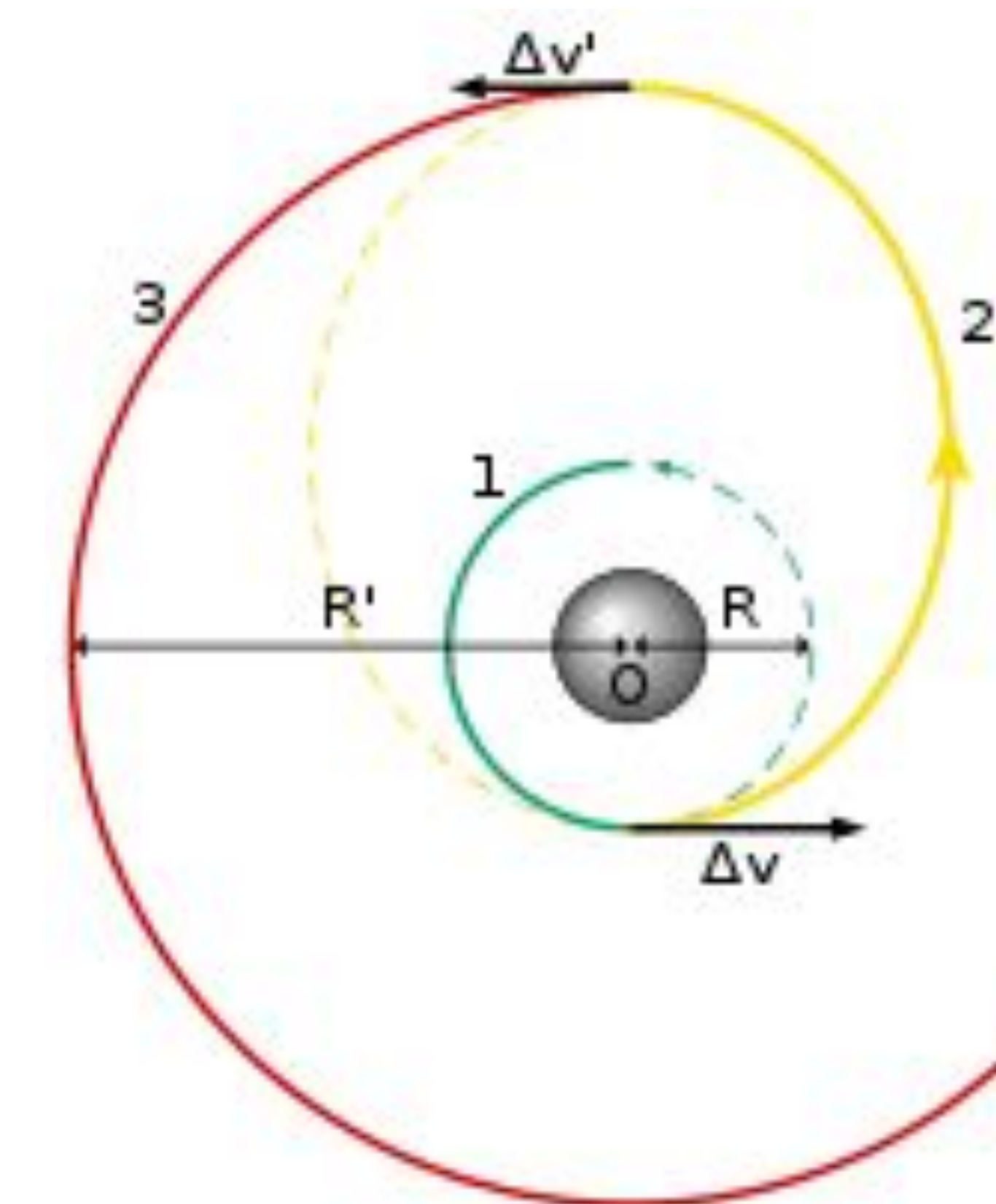
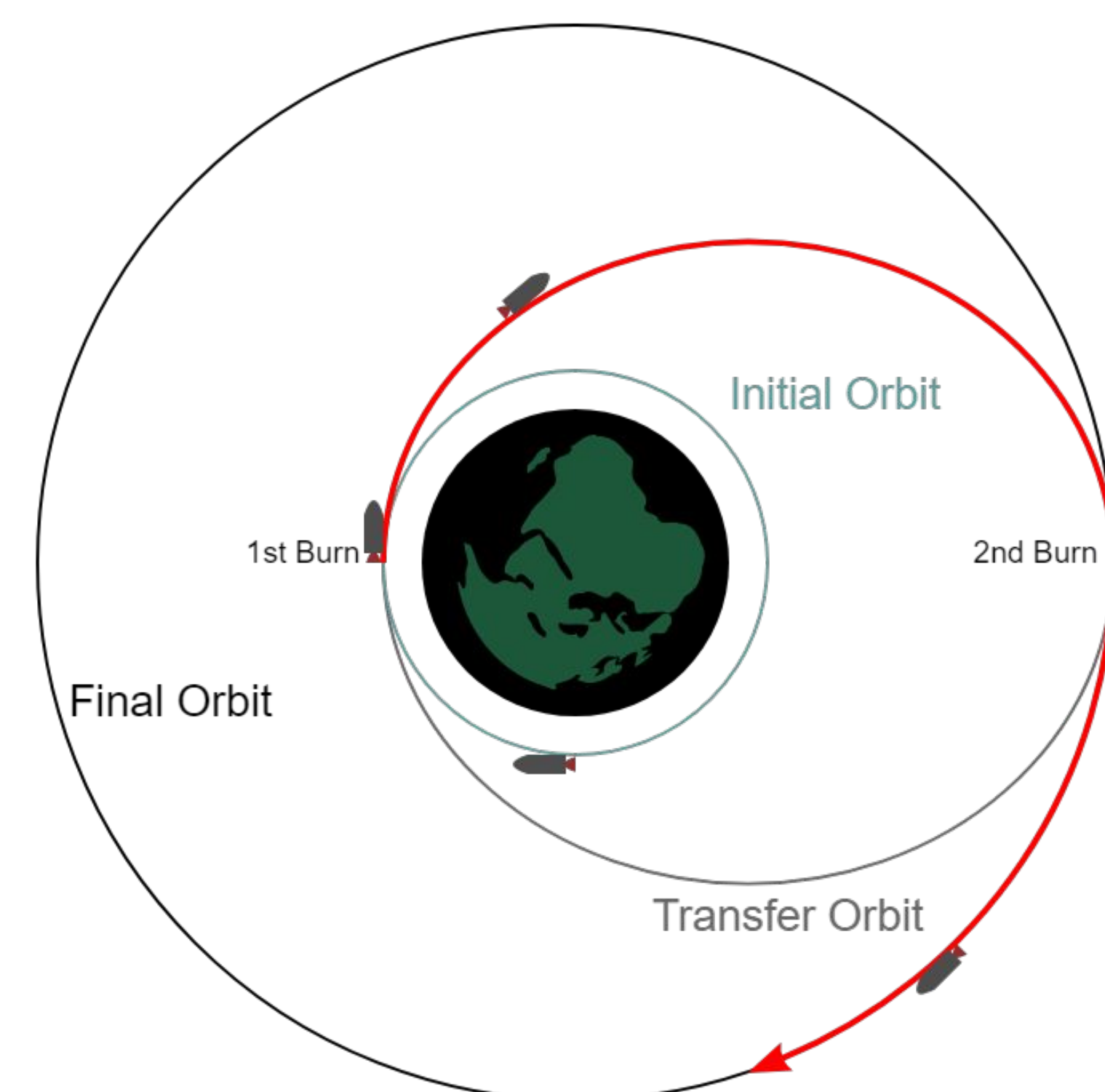
- Currently developing the deployment mechanism
- Current system would utilize springs to deploy CubeSats
- Latches would hold CubeSat in place by holding onto rails
- The spring will push CubeSat out of its slot when latches are released

### Cold-Gas Thruster

- Thruster system will use Nitrogen as fuel
- Currently working on nozzle design
  - Nozzle will be a diverging nozzle
- Making progress on design of piping system
  - Considering a comparative study comparing the efficiency of different pipe layouts
- Will use CFD to verify thruster performance once all dimensions are calculated

### Orbital Mechanics

- Settled on the use of a combination of Bi-Elliptic transfer orbits and Hohmann transfer orbits to minimize required delta-v
- Currently targeting an orbital range of  $\pm 70$  kilometers from the orbit of the ISS (408 kilometers)



Hohmann transfer [1] (left) | Bi-Elliptic Transfer [2] (right)

### Points of Contact

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### Sources

[1] File:Orbital Hohmann Transfer.svg. Wikimedia Commons. (n.d.). Retrieved April 2, 2023, from [https://commons.wikimedia.org/wiki/File:Orbital\\_Hohmann\\_Transfer.svg](https://commons.wikimedia.org/wiki/File:Orbital_Hohmann_Transfer.svg)

[2] "Bi-elliptic transfer," Wikipedia, 15-Jun-2022. [Online]. Available: [https://en.wikipedia.org/wiki/Bi-elliptic\\_transfer](https://en.wikipedia.org/wiki/Bi-elliptic_transfer). [Accessed: 02-Apr-2023].