

SUMMARY:

STARS-Me (Space Tethered Autonomous Robotic Satellite-Mini Elevator) as the name suggests is a passionate effort towards the realization of a space elevator. STARS-Me is a 2U CubeSat, of dimensions 100 X 100 X 227 mm, with weight less than 2.66kg. STARS-Me consists of two CubeSats having basic functions independently, and each satellite communicates with the ground station independently. One of them is called CV, and the other is called HT and are connected by a rigid tape tether. CV has a climber and approximately 3m tether, and HT has the tether deployment mechanism consisting of approximately 11m tether accounting to a total of 14m tether.

The mission sequences of STARS-Me are planned as follows:

- Initial operation mode

Two satellites are first secured together and put into orbit. Thereafter, they will be unlocked. Each satellite will simultaneously deploy their antenna and start transmitting CW beacon. We will then confirm if each device equipped in each satellite are working normally from the ground station.

- STARS-Me separation mode

At the command from the ground station, two satellites will deploy their tether using motors. We will acquire mission data and confirm that STARS-Me has been separated. Furthermore, after acquiring each detailed data, the separation distance and stability are analyzed.

- Climber traverse mode

The climber will traverse on the tether after being unlocked from the CV. The climber has a Bluetooth and communicates with the CV. From the data of the climber and each satellite, we analyze the behavior of the mini elevator. We can also confirm that the climber has traversed on the tether.