

The Ranging And Nanosatellite Guidance Experiment (RANGE)

The Ranging And Nanosatellite Guidance Experiment (RANGE) cubesat mission was recently selected for a flight opportunity as part of the Terra Bella (formerly Skybox) University Cubesat Partnership, with a tentative launch date scheduled for 2016. The RANGE mission involves two 1.5U cubesats flying in a leader-follower formation with the goal of improving the relative and absolute positioning capabilities of nanosatellites. The satellites' absolute positions will be tracked using GPS receivers synchronized with miniaturized atomic clocks, and will be validated using ground-based laser ranging measurements. The relative position of the satellites will be measured using an on-board compact laser ranging system, which will also double as a low-rate optical intersatellite communication system at close range. **The primary communication system is a UHF software-defined radio that will transmit and receive all mission data/telecommands from the Georgia Tech ground station.** The satellites will not have an active propulsion system, so the separation distance of the satellites will be controlled through differential drag techniques. The results of the mission should serve to enable more advanced payloads and future mission concepts involving formations and constellations of nanosatellites.

