

Precise orbit determination of the Ranging And Nanosatellite Guidance Experiment (RANGE)

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The Ranging And Nanosatellite Guidance Experiment (RANGE) mission is two-satellite cubesat mission developed at the Georgia Institute of Technology with the goal of improving the absolute and relative positioning capabilities of small satellites. The twin 1.5U satellites will fly in a leader-follower formation and will carry dual-frequency GNSS receivers, as well as an inter-satellite ranging system and a miniaturized atomic clock. To both determine and validate the precise orbit estimates of the satellites, the Naval Research Laboratory and the International Laser Ranging Service (ILRS) will gather regular ground-based laser ranging measurements. Each satellite is fitted with four retroreflectors on the nadir-facing panel, as well as a pop-out retroreflector that will aid in additional pose and attitude determination experiments. This presentation will provide an overview the RANGE mission, its expected outcomes, as well as the specific hardware and mission design decisions made to accommodate ground-based laser ranging.