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Mission Description –

Bevo-2 is one of two spacecraft in the current LONESTAR mission. LONESTAR, Low earth Orbiting Navigation Experiment for Spacecraft Testing Autonomous Rendezvous and docking, is a programmatic partnership among the University of Texas at Austin, Texas A&M University and NASA-Johnson Space Center with the focus of developing and demonstrating Autonomous Rendezvous and Docking (ARD) technology for use on cost effective, low power microsatellite infrastructures. Over the course of three missions, the University of Texas at Austin and Texas A&M University will design and build three pairs of cooperative satellites with progressively more capability to test systems to ultimately demonstrate ARD on the third and final mission. The current mission is the second in the LONESTAR series, the first having been flown in 2009.

The Bevo-2 spacecraft will be deployed from the International Space Station. After initialization, Bevo-2 will demonstrate a state-of-the-art CubeSat attitude determination and control (ADC) suite that will be necessary to conduct ARD. The ADC suite includes a GPS receiver, MEMS gyroscopes, an accelerometer, sun sensors, star tracker, magnetometer, reaction wheels, torque rods, and a cold-gas propulsion unit. Additionally, the LONESTAR spacecraft will photograph its partner satellite and conduct crosslink communications to calculate relative navigation solutions. On-orbit performance will be analyzed and evaluated for use on the final LONESTAR mission.

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