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SPACE PROPULSION SYMPOSIUM (C4)
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COLD GAS PROPULSION SYSTEM FOR THE SAMSON NANO SATELLITES

Abstract

The Project name, SAMSON derives from; Space Autonomous Mission for Swarming and geolocatiON. Samson is led by the Technion – Israel Institute of Technology and supported by the Israeli Space Agency and local space industries. The objective of Samson is to perform flight formation of three Nano satellites, with fix distance, within the tolerance, between each other. To set the formation position, each satellite needs propulsion. Samson cluster will perform two missions: terrestrial geolocation of radiating source, and flight formation. Each satellite comprise of a 6U cubesat bus structure, dedicated payload, electronics and a propulsion system. SAMSON propulsion system is a plug and play unit built in a 2U segment of the 6U bus. The Propulsion Unit (PU) contains the following components: High Pressure propellant tank, with Krypton gas as propellant. Fill and Vent Valve (FVV). High Pressure Latch Valve (LV). Two Pressure Regulators, High and Low pressure (PR). Two pressure transducers, High and Low pressure (PT). Four thrusters (20 mili Newton each). The main challenge of the PU is to implement all components to fit in the 2U segment, with welded tubing, components brackets and propellant tank. Except the High Pressure Tank, FVV and PRs, that will be qualified to space use, all other components are COTS (Customer of the Shelf) with space heritage.