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CUAVA-1: AUSTRALIA'S NEW SPACE TRAINING CENTRE AND CUBESAT

Abstract

CUAVA-1 is the first CubeSat project of the new ARC 'Training Centre for CubeSats, UAVs, and Their Applications' (CUAVA), whose primary aim is the education and training of people, mostly PhD students, for the space sector. With significant heritage from the QB50 CubeSat INSPIRE-2, CUAVA-1 is a 3U CubeSat that will: (1) observe the Earth with a novel hyperspectral imager, (2) use a GPS instrument to explore radio occultation and the reception of GPS signals scattered off the Earth (as well as provide a backup determination of the CubeSat's location), (3) investigate Earth's plasma environment and associated space weather with radiation detectors, and (4) explore the performance of a new communications payload.

The satellite will launch in 2019, developed in tandem at the University of Sydney and the University of New South Wales (UNSW) and tested at the AITC in Australia. The satellite will be the second CubeSat in quick succession to be developed by the University of Sydney after the launch of the 2U Inspire-2(AU03) which was deployed from the ISS on the 26th of May 2017, as part of the QB50 initiative. CUAVA-1 will build on the previous Inspire-2 design utilising COTS components in unison with payloads provided from the Schools of Physics and Engineering at the University of Sydney, UNSW, with the added inclusion on this mission of a private commercial partner Air@Wave.

This satellite will be the first of many proposed satellite and UAV projects to be designed, developed and launched by the newly formed CUAVA. The primary goals of CUAVA are to train future engineers and scientists in space applications, commercialise products of industry partners, increase CubeSat capabilities, and increase overall interest in the space industry in Australia. CUAVA-1 will be a stepping stone for the Training Centre to bigger and more refined missions in the future. It will also fly first-generation payloads developed by the partners and directly address the Centre's goals.