

IAF MATERIALS AND STRUCTURES SYMPOSIUM (C2)  
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## STRUCTURE REDESIGN FOR THE NANOSATELLITE K'OTO

### Abstract

This manuscript presents the research related with the current development of the main load-carrying structure for the nanosatellite K'oto. A project that is been developing at the Advanced Technology Unit (UAT) at the National Autonomous University of Mexico (UNAM) campus Juriquilla in Queretaro, K'oto is one of the first satellites developed by a public university and financed by the Government of the state of Querétaro and seeks to make the leap towards the space race in Mexico.

The main objective of the structure subsystem team is to make adaptations to ensure the installation of the different hardware subsystems, taking into consideration the requirements of each of them, as well of the Japanese Aerospace Exploration Agency (JAXA) requirements.

The main structure was acquired by the Ecuadorian Civil Space Agency EXA. The satellite kit is made up of the structure, the ICEPS card, an amplifier and the battery. In addition to the correct distribution of subsystems, after several proposals, the changes that have been made include the following ones:

- Redesign of the foot brackets to ensure the minimum contact area with the adjacent satellite pin/spring, according JAXA requirements.
- Camera fastening system design, for a raspberry and a SC50MPA camera.
- Killer switch configuration redesign, including design and manufacture of the adapter brackets.

Designs and redesigns are done in parallel with the structural analysis team performing iterations to achieve a better design.

The UAT as an important member of the development and Mexico space research seeks to find lighter and stronger materials, simple structures and commercial components (COTS), that without being expensive can successfully accomplish with the requirements of the nano-satellite. Likewise the UAT continues to work and develop knowledge to improve design, redesign and systems integration.