

SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)  
Ignition - Primary Space Education (1)

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## THE FIRST ISRAELI CUBESAT - DUCHIFAT-1: A STUDENT ADVENTURE TO OUTER SPACE

**Abstract**

The First Israeli pico-sat is a secondary-students project. The satellite is due to launch on June 2014. The aim of the project is to create an experienced space-industry workforce using a hand-on experience, 1U Cubesat design.

While having a long history of space operations, Israel is yet to launch a Cubesat-standard satellite. The Cubesat Standard allows for Pico (100gr-1Kg) or Nano (1-10Kg) satellites to be designed, constructed, tested, launched and operated in relatively low cost. Satellites built under the Cubesat standard 1U can reach the weight of 1 kg, and are of 10 cm in all dimensions.

The main goal of the 1U, Duchifat-1, the pico-sat student satellite from Israel, is to serve as an educational platform to train the future personnel of the Space Industry in a hands-on, real-life project. The mission of Duchifat1-1 is to search and rescue from space by using APRS-Automatic Packet Reporting System amateur-radio protocol.

Amateur radio stations at schools, portable stations held by travelers at remote locations, and general amateur radio personnel, who fall within the service area will be able to utilize Duchifat-1 in case of distress.

Satellite design, construction and testing were funded by the Hertzelia Municipality.

The construction of the satellite took place in the space labs of the HSC, where a modern satellite ground station and an efficient clean-room were installed in the year 2012. Some 50 students took part in the Duchifat-1 design, construction and testing. All students are from Hertzelia and nearby cities. Students were selected for the project based on the following criteria: age (over 16), grade performance, exhibited cooperation in other educational projects and exemplary behavior.

Launch is set to June 2014 from Yasny Russian space launch base into a Low Earth Orbit (LEO) with an inclination  $i=97.98$  deg, and altitude  $h=620$  Km. It will be funded by the Israeli Space Agency and the Israeli Ministry of Science, Technology and Space.

Duchifat-1 will receive commands and messages - either text or APRS at the UHF 70cm radio amateur band, including persistent 'Shut down Transmissions' command if required. The satellite will transmit on the VHF 2m band, Morse code beacon, telemetry, APRS and text messages.