Micro-satellite designed by students launched

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Project aims to detect and measure cosmic radiation in stratosphere

Arguably India's first student-led micro-satellite was launched from TIFR Balloon Facility near ECIL. It aims to detect and measure cosmic radiation in stratosphere.

Named as Project Apeiro, the experiment was led by undergraduate students from BITS Pilani K.K. Birla Goa Campus — Sanket Deshpande, Lucky Kapoor, Shivangi Kamat, Vibhav Joshi and Pankaj Tiple. They were mentored by B. Satyanarayana, Scientific Officer (H), TIFR Mumbai.

The experiment was conducted using the technique of High Altitude Ballooning. This method allows studies in the near-space environment with the help of a zero-pressure plastic balloon, which lifts the experimental payload to desired altitudes. The flight for this payload was conducted from the TIFR Balloon Facility in Hyderabad, which is amongst a very few institutes from around the world capable of supporting such kind of a flight. The balloon and all other flight equipment required were completely developed at this facility.

The payload was launched at 2.12 a.m. on February 2 and achieved a first-float altitude at 24.8 km. The second-float altitude was achieved at 26.7 km. The flight was terminated at 5.17 a.m. on the same day. All flight control and experiment equipment were recovered successfully without any damage.

Students say the experimental payload consisted of a cosmic radiation detector made with a combination of scintilator and photomultiplier tubes. This detector system was supported by an on-board high and low voltage power supply system along with data acquisition systems. The development of the detector system was completed at the Tata Institute of Fundamental Research (TIFR), Mumbai.

This study is important to understand the biologically harmful cosmic radiation incidence on earth from outer space. Extended exposure to this radiation leads to an increased risk in cancer and tissue damage.