Project Apeiro

India's First Student-Led Micro-satellite

Microsatellite launched from TIFR Balloon Facility, ECIL, Hyderabad, Telangana, India on February 2, 2018

Project Apeiro is an experiment led by undergraduate students from BITS Pilani K.K. Birla Goa Campus. The experiment aimed to detect and measure cosmic radiation in stratosphere. This study is important to understand the biologically harmful cosmic radiation incident on earth from outer space. Extended exposure to this radiation leads to an increased risk in cancer and tissue damage. Hence, a thorough understanding of this radiation is essential to develop predictive and preventive mechanisms against their impact.

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

The flight for this payload was conducted from the TIFR Balloon Facility in Hyderabad, Telangana 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 for the flight of the Project Apeiro payload were completely developed at this facility. The payload was launched at 2:12 am IST on 2nd Feb 2018 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 am IST on 2nd Feb 2018. All flight control and experiment equipment were recovered successfully without any damage. This flight sets history by successfully completing the country's first near-space experiment completely developed by students.

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