

43rd STUDENT CONFERENCE (E2)
Student Team Competition (3-V.4)

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AZAD-1, INDIA'S FIRST SOLAR OBSERVATION STUDENT SATELLITE

Abstract

Sun is the only star whose surface can be studied in dramatic details and thus is a subject to many widespread research initiatives. Azad-1, India's first student satellite project dedicated to solar physics, is being developed by Maulana Azad National Institute of Technology (MANIT), India in collaboration with various research facilities across the country. It will study the solar corona at a very high resolution from a Sun-Synchronous LEO.

This project is a unique technology demonstration initiative that plans to study the Solar Atmosphere in Ultraviolet (EUV) and Ultraviolet (UV) region with a Miniaturized-EUV (M-EUV) Imaging telescope. The payload concept is a reverse engineering approach for miniaturizing a solar EUV telescope to demonstrate that a combination of Commercially-of-the-Shelf (COTS) items and custom developed components can be used to create short term scientific mission in a highly constrained development cycle. This paper presents the concept to design approach for the Azad-1 student satellite project, where various technology challenges are being resolved by students in a holistic Research and Development Environment. Innovative solutions will be developed by these students to match the scientific requirements and to extend the Nanosatellite capabilities to unprecedented realms.

The project is being developed by a team of undergraduate students from various engineering disciplines under an administrative framework comprising of students, faculty and experts. The most important assertion in this project is to provide the students of with a hands-on experience on the whole cycle developing a space mission from conceptualization to final assembly and testing. Azad-1 will also provide the students with the unique opportunity of collaboration with various national and international research agencies. The project is also seeking support from Indian Space Research Organisation (ISRO) which will provide its launch services and technical support under its vision to support such student initiatives.