DESIGN AND DEVELOPMENT OF CFRP TUBULAR STRUCTURE FOR SOFT X-RAY TELESCOPE PAYLOAD OF ASTROSAT

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Abstract

India has launched an astronomical space based observatory ASTROSAT in the year 2015 for unravelling the some of the secrets of our universe. Soft X-ray Telescope (SXT) was one among the payloads onboard for studying the sources of Soft X-rays in deep space. A composite structure was required for this purpose. It had to support the payload elements and maintain their relative locations precisely during launch as well as during its operation, in-orbit. The interface with the spacecraft was at the middle of the SXT structure with one part is inside and remaining part is outside of the spacecraft deck. The structural design was carried out to meet all the structural design requirements such as stability, stiffness and strength with minimum mass under the constraints of spacecraft interface and envelope. This paper presents the details of the structural design, development and qualification of a CFRP tubular SXT structure, which has been functioning satisfactorily in-orbit.

Keywords: Soft X-ray Telescope (SXT), CFRP Tubular Structure, Structure for Astronomical Payload