DEVELOPMENT OF A HIGH RESOLUTION, SPIN INSENSITIVE ACCELERATION MEASUREMENT PACKAGE FOR SCRAMJET FLIGHT TESTING

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Abstract

A high resolution acceleration measurement package was developed based on ISRO's flight proven Ceramic Servo Accelerometer (CSA) to capture change in vehicle acceleration during scramjet experiment. The package was located in the nosecone of the scramjet flight test vehicle. The design of the package had to meet the requirements of high resolution acceleration measurement in the high dynamic flight environment with peak acceleration touching around 20 g with a peak spin rate of about 5 rps. Specific attention was given to the design of the package and its location in the vehicle to eliminate spin induced effects in the measurement. This paper discusses the challenges in the design of the acceleration measurement package, the details of the measurement plan and the results obtained in the flight.

Keywords: ISRO, Scramjet, Ceramic Servo Accelerometer, Acceleration Measurement Package