



Miniature ion mass analyzer of the Chandrayaan-1 mission

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Operating within the energy range 15eV-15keV, and with a mass resolution sufficient to resolve 1, 2, 4, 8, 16, >32 u/q, the Solar Wind Monitor (SWIM) on-board the Chandrayaan-1 mission to the moon will be able to address several important scientific topics, beside the primary objective of monitoring of the solar wind to complement the measurements of energetic neutrals. Eg. (1) studies of the possible occurrence of mini-magnetospheres can give information about the interaction between these anomalies and the solar wind, (2) investigating the terminator region would make it possible to map the potential structures around this region, and (3) studying the ions behaviour in the lunar wake would make it possible to derive the electric field on the night side. Mechanically SWIM consists of (i) a sensor head and (ii) electronics board housing. The sensor comprises an electrostatic deflector, an electrostatic analyzer and a time-of-flight system, and is very light weight. The combined weight of the sensor head, electronic boards and electronic board housing is below 500g. As the sensor will, at times, look directly at the sun, a highly effective photon attenuation structure has been implemented.

In this presentation we will present the sensor design, discuss the calibration results, and mention the scientific goals for the mission.