

Evaluation of the performance of the CCD236 Swept Charge Devices in lunar orbit using in-flight data.

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India's Chandrayaan-2 Large Area Soft X-ray Spectrometer (CLASS), launched in 2019 aboard the Chandrayaan-2 spacecraft, has now spent an extended period of time in lunar orbit. CLASS is currently mapping the elemental composition of the lunar surface using X-ray spectrometry.

Building on the heritage of earlier instruments, CLASS employs 16 CCD236 Swept Charge Devices (SCDs) similar in structure to Charge Coupled Device (CCD) image sensors. The CCD236 permits X-ray detection over a large surface area, intended to improve low flux performance, with simplified control interfaces and reduced temperature requirements. These devices were the subject of ground testing and performance evaluation before flight. Data recently made available by the Indian Space Research Organisation (ISRO) has permitted the analysis of the performance of the CLASS SCDs after over a year of operations around the Moon. Of particular interest is the change in device performance and behaviour during transit and in lunar orbit. Preliminary analysis has indicated that the instrument FWHM, representing the aggregate response of most devices, has increased less than predicted by ground irradiation.

The authors will present the latest results from the analysis of instrument data with comparisons to earlier work completed on similar devices.

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