



“Correcting Galileo’s Energetic Particle Detector (EPD) data; Methodology, Implications and Applications”

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Over the course of its 8-year mission the Energetic Particle Detector, launched in 1989 on the Galileo satellite, took data on the Jovian Particle environment. In the high radiation environment, the EPDs Composition Measurement System (CMS) visibly decayed; higher mass particles, specifically oxygen and sulphur, reading at far lower energies and count rates later epochs in the missions. By considering the non-steady accumulation of damage in the detector, as well as the operation of the priority channel data recording system in place on the EPD, a correction can be made. A model of dead layer build-up in semiconductor detectors is built, based on SRIM results, and then used to reverse the effects of the build-up. The result, assigns an estimation of dead-layer depth during the mission data recordings, and produces a corrected version of the high rate data, for future use.