The High-Energy Particle Detector (HEPD-01) as a space weather monitoring instrument on board the CSES-01 satellite

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Executive summary

1 What is this contribution about?

This contribution is about the observation of the August 2018 G3-class geomagnetic storm with the High-Energy Particle Detector (HEPD-01) on board the China Seismo-Electromagnetic Satellite (CSES-01).

2 Why is it relevant / interesting?

The study of such events is crucial to better understand mechanisms taking place during solar events and to prevent their harmful effects on technological and anthropic systems (reduced satellite operations, failures in spacecraft electronics, radio communication problems, etc), as well as on human health.

3 What have we done?

We have studied HEPD-01 trigger rates during the storm time, as a function of both geographical coordinates and McIlwain L-shell parameter.

4 What is the result?

We found that particle rates in the MeV range were characterized, during the storm's recovery phase, by a clear enhancement at L-shells immediately above $\sim$3, thus suggesting a phenomenon of acceleration of energetic electrons, which lasted several days.