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# **GPS Radiation Measurements Instrument Modeling and Simulation (Project w14\_gpsradiation) LA-UR-15-**

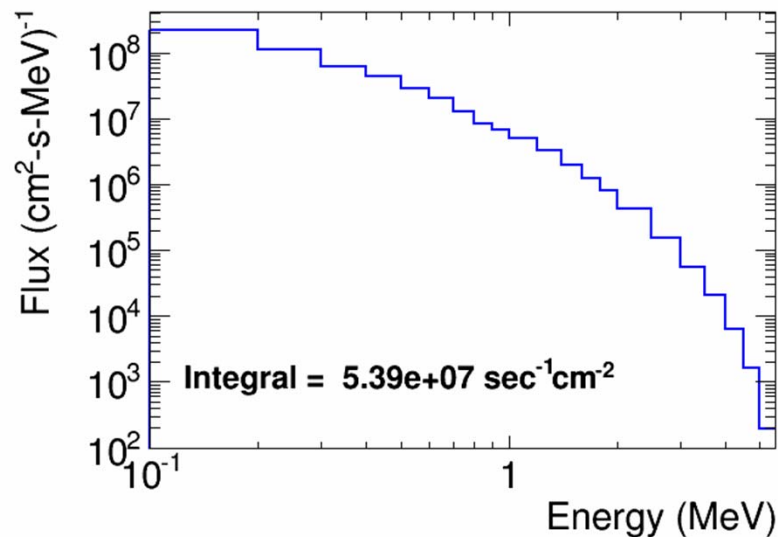
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26-Jun-2015

# Electron response simulations

Simulated background in all sensors as well as signal in the particle channels which are intended to measure electron. The electron channels are called E1-E11 – each of which is intended to detect a different range of electron energies.

- Input is electron energy distribution for GPS orbit at solar minimum (AE8MIN)



# Summary of E-channel rates

Channel	Eavg (MeV)	Rate (Hz)	Typical Rate SVN54 (Hz)
E2	0.74	3780	406
E4	1.4	898	320
E6	2.3	5432	159
E8	3.1	2470	1718
E10	4.6	38	3.5

“typical rate” came from picking a random GPS block IIF satellite (SVN54) and a year near the solar minimum (2008). IIF uses CsI scintillator with “flying saucer” shape. This simulation uses cylindrical YSO – so we do not expect the rates to be exactly the same. In addition, The AE8 should have been averaged over a GPS orbit but they were picked for a single location. Therefore the two columns are not really expected to agree.