

Noise attenuation method for the medium energy electron measurements in the inner magnetospheres

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The combination of cusp type electrostatic analyser (CEA) and avalanche photodiode (APD) is a very promising way for the medium energy electron (5-80[keV]) measurements. The novel design of CEA enables practical size of over-all system, with 2- π rad field of view; one can obtain the full solid angle coverage by using a satellite spin motion. APD is a kind of p-n junction semiconductor with an internal gain, which enables reliable conversions from count rates to the true flux. In the planetary inner magnetospheres, however, it is significantly difficult to accurately measure electron fluxes, due to the contamination by penetrating high energy particles. In order to solve the issue, we propose the method of noise attenuation, by using the combination of anti-coincidence and pulse height analysis. On the basis of the high energy electron irradiation test, we quantitatively discuss the proper thickness of the APD for the noise attenuation.