Development of a Fast Electron energy Spectrum Analyzer(FESA) for geo-magnetosphere observation

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The importance of the in-situ measurement of the electron distribution function with high time resolution in the Earth's magnetosphere has been recognized recently. GEOTAIL observations of the low energy ions have revealed the role of the low energy ions in the Earth's magnetotail. However the microscopic distribution of the electrons is still unknown because of the insufficient time resolution in electron measurements. In order to obtain the microscopic electron distribution in the Earth's magnetotail, the time resolution of the electron measurement should be about 1000 times higher than the previous observations. We have started to develop a Fast Electron energy Spectrum Analyzer (FESA) that has high time resolution of 10msec.