

Preliminary Design Report for FIMS Detection System

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Detection system of Far-Ultraviolet Imaging Spectrograph(FIMS) which is composed of MCP, anode and readout electronics, was preliminarily designed to meet scientific requirements and tested. The choice of detector and anode strongly depends on the design specification of optical system and we have adopted Z-stack MCP with double delay line anode for our detection system. Readout electronics is mainly determined by the choice of anode type. For the case of double delay line system, charge ratio of each electrode and time difference of delayed signal contains 2-dimensional position information. Hence, readout electronics is composed of two independent amplifier chains. One is for comparing charge ratio and the other is for generating a pulse whose amplitude is proportional to the time difference.

We have checked for the overall performance - spectral and imaging resolution, image linearity, PHD, background, pattern and electronic noise - of our preliminary detection system and report the results.