

The Study of Pulse Height Spectra of Single Microchannel Plate with Large Length-to-diameter Ratio

The pulse height spectra of a one-stack microchannel plate (MCP) are studied. The MCP studied is with a length-to-diameter ratio (L/D) of 80:1, which is larger than the usual MCPs for image intensifier application while are stacked as component. Using single MCP with large L/D, can achieve high gain ~ 106 , and get better resolution than MCP assembly. In this manuscript, we measure the single and multiple electron spectra of the single MCP using a test system including a low noise charge sensitive preamplifier, shaping amplifier and multichannel analyzer; and fit the multiple electrons spectra with a function including the effects of multiple Gauss distribution, noise, and Poisson distribution. In addition, by the different input electron numbers, the mechanism of the two distribution is studied.

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