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A multichannel detector array with 768 pixels developed for electron spectroscopy

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A one dimensional detector array using MCP technology in conjunction with a custom ASIC is presented. The detector chip features 768 pixels, each 3mm in length on a pitch of 25um, giving a length in the dispersive direction of 19.2 mm. Each pixel is furnished with a pre-amplifier and discriminator coupled to a 16-bit counter. The chip and MCP are mounted on a ceramic and stainless steel assembly that replaces the conventional channeltron in a CLAM4 electron energy analyser. Results are presented showing key aspects of the detector, including the yield of the chip at wafer stage, the vacuum compatibility of the system, the speed of readout, uniformity of response and maximum count rate.

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