

Abstract Submitted
for the HAW05 Meeting of
The American Physical Society

R&D of a low background cosmic Hard X-ray Imager with a Position Sensitive PMT and an Active Coded Mask SHINYA HIRAKURI, MOTOHIDE KOKUBUN, TAKESHI ITOH, TAKAYUKI YANAGIDA, RYOHEI MIYAWAKI, University of Tokyo, KAZUO MAKISHIMA, University of Tokyo / RIKEN, SHIN KUBO, Clear-Pulse Co.,ltd, TSUNEO HONDA, Ohyo Koken Kogyo Co.,ltd — A new low background cosmic hard X-ray imager has been developed, based on the Hard X-ray Detector (HXD-II) which is one of the scientific payloads on board the 5th Japanese cosmic X-ray satellite *Astro-E2* (scheduled for launch in June 2005). The imager incorporates one of the basic design concepts of the HXD-II, namely tight well-shaped active shields. Furthermore, it has an imaging capability (unlike the HXD-II), using a coded mask and a position-sensitive main detector. In order to reduce the background, the mask is made of active elements. First we made a prototype model, of which the main detector consists of a 64ch flat panel position sensitive photomultiplier (FP-PMT:HAMAMATU H8500) and an 8×8 array of CsI scintillator cubes of 5 mm in one dimension each. Reading out its 64 anode outputs by 8 of resistor chains, we achieved a spatial resolution of about 5 mm (digitized). To improve the spatial resolution, we have adopted 256ch FP-PMT (HAMAMATU H9500) and are developing a readout unit which can acquire its 256 anode outputs, pixel by pixel, using analog LSI chips (ideas VA32 TA32).

Shinya Hirakuri
University of Tokyo

Date submitted: 25 May 2005

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