

Soft X-ray performance of Back-illumination type of the Kyoto's X-ray Astronomical SOIPIXs

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We have been developing SOI pixel sensor (SOIPIX), "XRPIX", for future X-ray astronomical satellites, which is monolithic active pixel sensor based on the silicon-on-insulator (SOI) pixel technology. XRPIX is equipped with event-driven readout mode which offers a fast readout with the timing resolution better than 10 micro sec by reading out the hit pixels only. We started development of the back-illuminated type of XRPIX with the dead layer less than 1 um in order to observe soft X-rays with the energy lower than 1 keV. As a first step of the development, we processed two types of back-illuminated XRPIXs (BI-XRPIX), one of which is produced with "Pizza process" developed by LBNL and the other is processed with the ion implantation and laser annealing. We irradiated the BI-XRPIXs with soft X-ray and investigated soft X-ray performances. The ratio between the counting rates of Ti-K (4.5 keV) and Cu-K (8.0 keV) X-rays suggests that the current version of BI-XRPIX with the Pizza process has the dead layer thickness of 2.0 (+1.1, -0.6) um. The measurements of the charge collection efficiency and spectral quality are under way. We will report the latest results from soft X-ray evaluation in the presentation.

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Session Classification: After dinner POSTER session, with drinks: (All presenters are requested/encouraged to attend their posters; All participants are requested to participate the session, with drinks!)

Track Classification: Pixels (incl. CCD's) - X-ray imaging