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Development of X-ray Imaging system with SOI Pixel Detectors

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The authors are developing the X-ray imaging system by using a Silicon-On-Insulator (SOI) technology. This system consists of the integration type SOI pixel detectors, named INTPIX4, and the DAQ system based on the multi purpose readout board, named SEABAS2 (Soi EvAluation BoArd with Sitcp 2). As in the past, the parallel readout have been already implemented to INTPIX4 and it realized speedup. However, the total throughput of the DAQ system became the new bottleneck. In order to solve this problem, the parallel processing (data taking process and data storing process) and FIFO buffer were implemented for DAQ software. In result, DAQ throughput was increased to 90Hz (613Mbps) from 6Hz (41Mbps). The authors tried to apply this new DAQ for the X-ray imaging at KEK photon factory. First X-ray imaging was tested at PF BL-14C (33.3keV mono X-ray), integrated still X-ray images of small samples (dried anchovy, red pepper, electrical parts) were taken. Second time was tested at PF BL-14B (9.5keV mono X-ray), integrated still X-ray images for 3D (3-dimensional) CT (Computerized Tomography) of dried anchovy were taken. Sample was taken every 1 degree rotating, total 181 times. These images were reconstructed as the high resolution 3D CT data. The detail of these X-ray tests will be shown in 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