Contribution ID: **177** Type: **Poster**

1.2 Mfps standalone X-ray detector for Time Resolved Experiments

Wednesday 10 July 2019 16:53 (2 minutes)

We present first, standalone and autonomous X-ray camera capable of operation 1.2 Mfps. The camera utilizes UFXC32k hybrid pixel detectors for sensing X-rays, FPGA for sensor data acquisition and compression, Real-Time operating system for FPGA control and data streaming to the higher-level system over 1Gbps Ethernet connection. 1.2 M frames per second is achieved in so-called burst mode of operation while in zero-dead time mode 50 kfps is possible. Due to efficient data compression in FPGA there's no need of using high-speed transceivers and a Frame-Grabber cards on the data server side and the detector can stream the data infinitely over standard 1 Gbps network connection. The camera was prepared for autonomous operation at Advanced Photon Source Synchrotron for X-ray Photon Correlation Spectroscopy experiment and shows excellent performance. Details of camera construction both discrete electronics and software structure will be shown together with APS synchronization methods and meaningful results of measurements of dynamic behavior of biological samples. Comparison to other commercially available detectors will be provided.

Authors: Dr MAJ, Piotr (AGH University of Science and Technology); OTFINOWSKI, Piotr (AGH University of Science and Technology); Dr KOZIOL, Anna (AGH University of Science and Technology); GORNI, Dominik (AGH University of Science and Technology); DUDEK, Piotr (AGH University of Science and Technology)

Presenter: Dr MAJ, Piotr (AGH University of Science and Technology)

Session Classification: Poster Exhibition 2, Posters ID 81 - 182, chair: Christer Frojdh

Track Classification: general