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The HyPix-6000HE detector – no photon left behind

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Collecting datasets which are high quality yet efficient for a wide range of sample types and crystal quality is a key requirement of many diffractometer users around the world. Access to equipment which meets this requirement can enable high throughput, provide better data quality or open up new areas of research. One component of such a high throughput diffractometer is the detector. Here we will explore the use of a hybrid photon counting detector to enhance data collection capabilities of modern diffractometers.

Hybrid Photon Counting (HPC) detectors have established themselves as the detector of choice for synchrotrons and where the highest quality of data is a requirement due to their direct detection of X-rays, zero readout noise and high speed. The HyPix-6000HE detector is a HPC detector designed and produced by Rigaku. HPCs are scintillator-free by design, which allows for true digital photon counting. This means that X-ray photons are counted as soon as they arrive at the detector with no approximation of counts from integrated charge and no conversion of X-ray photons to light photons with the requisite addition of noise. Additional features such as energy discrimination, a zero dead time mode and 100 Hz frame rates are also enabled by the technology present in the HyPix-6000HE detector.