

the pixel size is 0.21×0.21 mm². Each pixel contains a charge sensitive amplifier, a comparator and a 15 bit counter. The low-noise amplifier permits single photon counting of X-rays in each pixel at energies above 6 keV; the data are digitally stored in each pixel. The most important features of the detector are: no dark current and no readout noise, resulting in a high dynamic range; point-spread function of one pixel; a quantum efficiency of 75% at 12keV; and a read-out time of 6.7ms. The short readout time allows collecting crystallographic data in fine-phi slicing mode with continuous sample rotation.

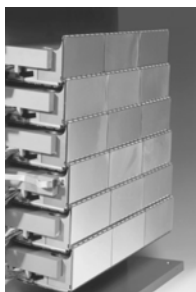


Figure: Side view of the PILATUS 1M detector.

We have performed several experiments at beamline X06SA with NIST reference powder samples and protein crystals, such as insulin and thaumatin. We have collected both traditional and fine-phi sliced data-sets with continuous sample rotation, i.e. without any shutter operation. Since it is a novel, modular detector, we are currently determining the corrections which are needed to be able to process the data with standard crystallographic packages.

The features and current limitations of this detector technology are described and the results from the experiments are shown.