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The LPD Detector Development

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We present the latest status of the Large Pixel Detector (LPD) research and development program. The LPD is being developed by STFCs Detector Systems Centre for The European XFEL. To match the properties of the XFEL machine this detector system must be capable of operating with a high frame rate (4.5MHz), large dynamic range (10^5 photons), while maintaining low noise (~ 1 photon). The system must also have a large memory depth (512) and the accompanying high rate data acquisition system (1.5 GB/s) with real time data sparsification. To increase efficiency of the memory available a veto system is also required for bad frames. These requirements have been realised through the development of a complete detector system, encompassing silicon detectors and ASIC through to DAQ and supporting electronics and mechanics. The LPD system is built around a 4096 pixel detector tile with 500um pixels. These units are butted together to form larger area sensors. Details will be presented on all system components.

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