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## Detector Developments at Cornell

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A variety of pixel array detectors (PADs) under development at Cornell are described. Analog integration of the x-ray induced signal has been used extensively within the pixels of these detectors to allow for imaging with x-ray fluxes which would exceed photon counting limits. Using analog integration, however, does not preclude imaging with single photon sensitivity. High quality imaging can be demonstrated using data sets with fluences of only a few photons per frame. Detector projects include devices for single bunch imaging as well as a device with an extended dynamic range utilizing an overflow counter with pixel reset. An additional project is underway which will use a highly parallel data stream between the detector chip and a field programmable gate array (FPGA) to allow customizable pixel-level data processing such as computation of the time autocorrelation function on time scales as short as 100 ns.

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