

## Poster Presentation

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#### *Integration and first data with a Pilatus3 6M at APS beamline 23ID-D*

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GM/CA@APS operates two insertion-device beamlines, 23ID-B and 23ID-D, and one bending magnet beamline, 23BM-B, in sector 23 of the Advanced Photon Source. We recently integrated a Pilatus3 6M detector - a new generation of large sensitive area detectors based on pixel array detector technology and marketed by Dectris. The sensitive area of the device is 423.6 mm × 434.6 mm. The Pilatus3 features the newly implemented re-triggering mechanism that increases the count-rate capabilities by almost an order of magnitude compared to previous generation Pilatus detectors. The detector installed on beamline 23ID-D is the first Pilatus3 6M with a 1000-micron thick sensor, offering higher efficiency at energies above 12 keV. The fast read-out (0.95 ms) and high speed (up to 100 Hz) of the detector allow shutterless data collection. The detector has been fully integrated into the JBlulce user interface and data processing pipeline at GM/CA. Systematic studies with protein crystals were carried out in order to optimize data collection parameters. Overall data collection speed (frame rate), oscillation width per frame, spindle axis speed, and re-triggering have been studied. Different sets of optimal parameters have been established for crystallographic data collection and for crystal screening with the raster feature (grid scanning). The results of these studies and of performance measurements will be presented. This project and GM/CA @ APS are supported by the National Institute of General Medical Sciences and Cancer Institute of NIH.

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