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Real-time data processing for serial crystallography at P11

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We have been using ASAP::O to process data in real time from an Eiger 16M detector, in serial crystallography experiments at P11. The system performs a peak search before indexing and integrating each diffraction pattern, producing Bragg reflection intensity measurements without any need (in principle) to store image data.

Through rounds of performance profiling, we reduced the time taken to process one pattern (in one thread) to only 455 ms, meaning that the dedicated P11 computing resources are sufficient to keep up with the 133 frames per second speed of the Eiger detector, despite the very large number of pixels (16M).

The pipeline is available for user experiments at P11 (and other beamlines).

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