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ASAPO: A high-speed streaming framework to support an automated data-processing pipeline.

Modern scientific experiments often generate large amounts of data, posing challenges for real-time processing and analysis. ASAPO, a high-performance streaming framework developed at DESY, addresses these challenges by providing a robust solution for online and offline data processing. Leveraging TCP/IP and RDMA over Ethernet and Infiniband, ASAPO facilitates high-bandwidth communication between detectors, storage systems, and analysis processes.

ASAPO offers user-friendly interfaces for C/C++ and Python on all major platforms, streamlining the development of data processing pipelines. A high-level Python library reduces boilerplate code and enables the creation of complex analysis workflows with ease. Key features include automatic re-transfer, trivial parallelization on a per-image basis, support for multi-module detectors, and web-based monitoring capabilities.

Several experimental facilities at Petra III already benefit from ASAPO, employing it in various data-processing pipelines. Examples include azimuthal integration of X-ray scattering data, peak finding, and indexing of diffraction patterns. These applications demonstrate ASAPO's versatility and effectiveness in accelerating scientific discovery.

Speed talk:

Normal speed talk selection

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