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A GENERIC DAQ FRAMEWORK FOR HIGH PERFORMANCE 2D XRAY DETECTORS

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Scientific experiments rely on some type of measurements that provides the required data to extract aimed information or conclusions. Data production and analysis are therefore essential components at the heart of any scientific experimental application.
Traditionally, efforts on detector development for photon sources have focused on the properties and performance of the detection front-ends. In many cases the data acquisition chain was treated as a complementary component of the detector system that was added at a late stage of the project. In some cases, the data acquisition subsystems, although achieving minimum bandwidth requirements were kept relatively simple in term of functionalities, and this to minimize design effort, complexity and implementation cost.
This approach is changing in the last years as it does not fit new high performance detectors; industrial data acquisition protocols do not provide the required data throughput and implementing high performance schemes becomes much more difficult and resource consuming. Detector developers are changing their paradigm and moving into the development and implementation of reusable high performance data acquisition schemes that can be applied to different kind of detector devices.
This paper addresses the definition and development of a data acquisition framework, called RASHPA, which has been designed and optimised to be integrated in future light source detectors. This framework is conceived to be adopted by developers working with a variety of detection technologies and schemes and not specific to one detector. RASHPA however is optimised and will provide maximum added value when used with two dimensional area detectors.

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Description

Speaker

Wassim Mansour

Institute

ESRF

Country

France

Authors: MANSOUR, Wassim (ESRF); JANVIER, Nicolas (ESRF); FAJARDO, Pablo (ESRF)

Presenter: MANSOUR, Wassim (ESRF)

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