

Workload Management System Development for SPD Online Filter

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One of the principal technical characteristics of the SPD (Spin Physics Detector) is its triggerless data acquisition. The data acquisition system (DAQ) aggregates data from the detectors of the facility and organizes them into blocks for further primary processing. This approach allows for data arrival rates of up to 20 Gb/sec, with the annual volume of collected data reaching hundreds of petabytes. To address the challenge of detecting and filtering events in the data stream, a specialized computing system, the SPD Online Filter, is being developed.

The “SPD Online Filter” will be a complex of hardware and software designed for the high-throughput processing of primary data from the SPD experimental unit’s detection system. The hardware component will comprise a set of multi-core computing nodes, high-performance data storage systems, and a number of control servers. The software component will include not only application software but also a set of middleware that will organize and execute multi-stage data processing steps.

This talk will present a description of the architectural and functional characteristics of a prototype workload management system, together with an account of its current status. The system is designed to facilitate the generation of computational jobs for processing a block of data, the distribution of jobs to computing nodes, and the control of their execution.

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