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CMS Event Processing Multi-core Efficiency Status

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In 2015, CMS was the first LHC experiment to begin using a multi-threaded framework for doing event processing. This new framework utilizes Intel's Thread Building Block library to manage concurrency via a task based processing model. During the 2015 LHC run period, CMS only ran reconstruction jobs using multiple threads because only those jobs were sufficiently thread efficient. Recent work now allows simulation and digitization to be thread efficient. In addition, during 2015 the multi-threaded framework could run events in parallel but could only use one thread per event. Work done in 2016 now allows multiple threads to be used while processing one event. In this presentation we will show how these recent changes have improved CMS's overall threading and memory efficiency and we will discuss work to be done to further increase those efficiencies.

Tertiary Keyword (Optional)

Secondary Keyword (Optional)

Parallelizarion

Primary Keyword (Mandatory)

Data processing workflows and frameworks/pipelines

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