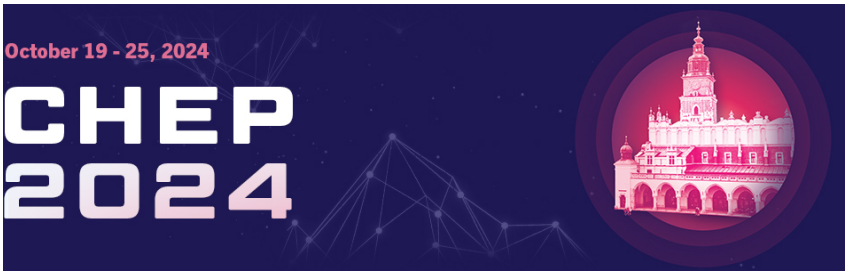

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Performance studies for ATLAS workloads in many-core Grid and HPC environments

Tuesday 22 October 2024 16:00 (15 minutes)

Developments in microprocessor technology have confirmed the trend towards higher core counts and decreased amount of memory per core, resulting in major improvements in power efficiency for a given level of performance. Core counts have increased significantly over the past five years for the x86_64 architecture, which is dominating in the LHC computing environment, and the higher core density is not only a feature of large HPC systems, but is also readily available on commodity hardware preferentially used at Grid sites. The baseline multi-core workloads are however still largely based on 8-cores. The job are sized accordingly in terms of number of events processed. The new multi-threaded AthenaMT framework has been introduced for ATLAS data processing and simulation for Run-3 in order to address the performance limitations of the classic single-threaded Athena when run in parallel in multi-core jobs. In this work, the performance of some ATLAS workloads is investigated when scaling up core counts up to whole node where possible and at different job sizes with the aim of providing input to software developers.

Primary authors: FILIPCIC, Andrej (Jozef Stefan Institute (SI)); SCIACCA, Gianfranco (Universitaet Bern (CH)); WEBER, Michele (Universitaet Bern (CH))

Presenter: SCIACCA, Gianfranco (Universitaet Bern (CH))

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