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The Future of Commodity Computing and Many-core versus the Interests of HEP Software [1]

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As the mainstream computing world has shifted from multi-core to many-core platforms, the situation for software developers has changed as well. With the numerous hardware and software options available, choices balancing programmability and performance are becoming a significant challenge. The expanding multiplicative dimensions of performance offer a growing number of possibilities that need to be assessed and addressed on several levels of abstraction. This paper reviews the major trade-offs forced upon the software domain by the changing landscape of parallel technologies ? hardware and software alike. Recent developments, paradigms and techniques are considered with respect to their impact on the rather traditional HEP programming models. Other considerations addressed include aspects of efficiency and reasonably achievable targets for the parallelization of large scale HEP workloads.
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