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Massive Affordable Computing Using ARM Processors in High Energy Physics

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Abstract content
   (Max 300 words)
Formatting &
Special chars

High Performance Computing is relevant in many applications around the world, particularly high energy physics. Experiments such as ATLAS and CMS generate huge amounts of data which needs to be analyzed at server farms located on site at CERN and around the world. Apart from the initial cost of setting up an effective server farm the price to maintain them is enormous. Power consumption and cooling are some of the biggest costs. The proposed solution to reduce costs without losing performance is to utilize ARM processors found in nearly all smartphones and tablet computers. Their low power consumption and cost along with respectable processing speed makes them an ideal choice for future large scale parallel data processing centers. Benchmarks on the Cortex-A series of ARM processors including the well-known HPL and STREAM suites will be presented. Results from the PROOF benchmarks will be presented and analyzed. Issues with currently available operating systems for ARM architectures will also be discussed.

Apply to be
 considered for a student
   award (Yes / No)?

Yes

Level for award
 (Hons, MSc,
   PhD)?

MSc

Main supervisor (name and email)
and his / her institution

Andrew Hamilton <andrew.hamilton@cern.ch>

Would you like to <br> submit a short paper <br> for the Conference
 Proceedings (Yes / No)?

Yes

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