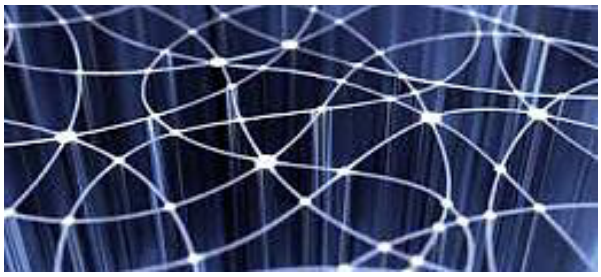

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CPU Benchmarking performance for ARM Processors

The Large Hadron Collider (LHC) at CERN is currently undergoing a major
upgrade to handle higher energies. This will be the first of two upgrades and the expected amount of data produced by this upgraded system will far exceed current data throughput capabilities. It is expected that the same will be so for the Square Kilometre Array (SKA) Radio Telescope. A potential alternative to current high performance computing systems involves using low-cost, low-power ARM processors in large arrays to provide massive parallelisation and hence large data throughput. The central advantage in using ARM processors is found in the central processing unit (CPU). As such, a thorough evaluation and benchmarking of the CPUs of three different models of ARM processor, namely the Cortex-A7, Cortex-A9,and Cortex-A15, has been prepared. Results have been obtained for single and multiple (cluster-configuration)
processors and an attempt has been made to compare benchmark performance in standardised tests such as High Performance Linpack (HPL) to “real-world”
performance applications.

Summary

Keywords: ARM, benchmark, CPU, high-throughput computing, high-performance computing, LHC, ATLAS, SKA, CERN.

Primary authors: Mr HARMSEN, Gerhard (University of the Witwatersrand); Mr REED, Robert (University of the Witwatersrand); Mr WRIGLEY, Thomas (University of the Witwatersrand)

Co-authors: Mr PADAVATAN, Jonathan (University of the Witwatersrand); Mr COX, Mitchell (University of the Witwatersrand)

Presenter: Mr REED, Robert (University of the Witwatersrand)