Second update The Gordon Bell Competetion entry gb110s2

P. Vranas, R. Soltz

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Disclaimer

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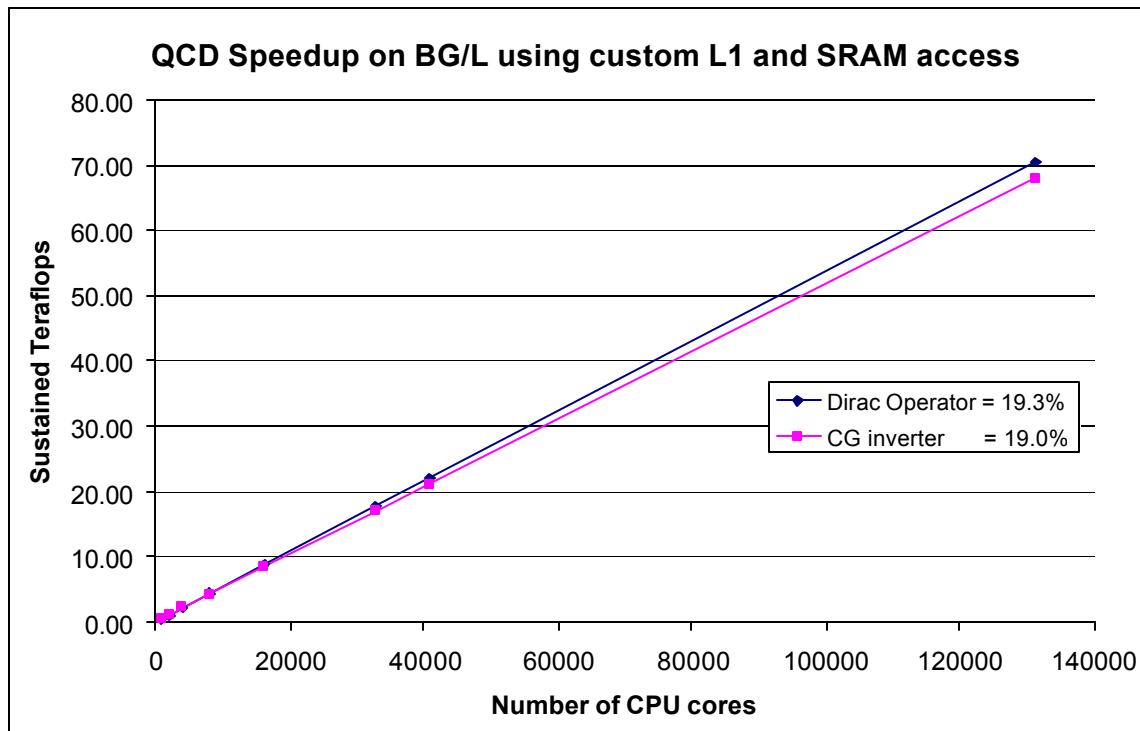# The BlueGene/L Supercomputer and Quantum ChromoDynamics

Dear Gordon Bell Competition Committee,

Since the update to our entry of October 20th we have just made a significant improvement. We understand that this is past the deadline for updates and very close to the conference date. However, Lawrence Livermore National Laboratory has just updated the BG/L system software on their full 64 BG/L supercomputer to IBM-BGL Release 3. As we discussed in our update of October 20 this release includes our custom L1 and SRAM access functions that allow us to achieve higher sustained performance. Just a few hours ago we got access to the full system and obtained the fastest sustained performance point.

In the full 131,072 CPU-cores system QCD sustains 70.9 Teraflops for the Dirac operator and 67.9 teraflops for the full Conjugate Gradient inverter. This is about 20% faster than our last update. We attach the corresponding speedup figure. As you can tell the speedup is perfect. This figure is the same as Figure 1 of our October 20th update except that it now includes the 131,072 CPU-cores point.

We would be most grateful if you can consider this at this late date. Again, thank you very much.

Best wishes,
Pavlos Vranas

QCD Speedup on BG/L using custom L1 and SRAM access

Dirac Operator = 19.3%
CG inverter = 19.0%

(y-axis: Sustained Teraflops; x-axis: Number of CPU cores)