

Benchmarking Fermi Microarchitecture

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1 Goals

The goals of this research is to expose the microarchitecture implemented by Nvidia Fermi cards such as: pipeline length, instructions latency, scheduling patterns.

2 Methods

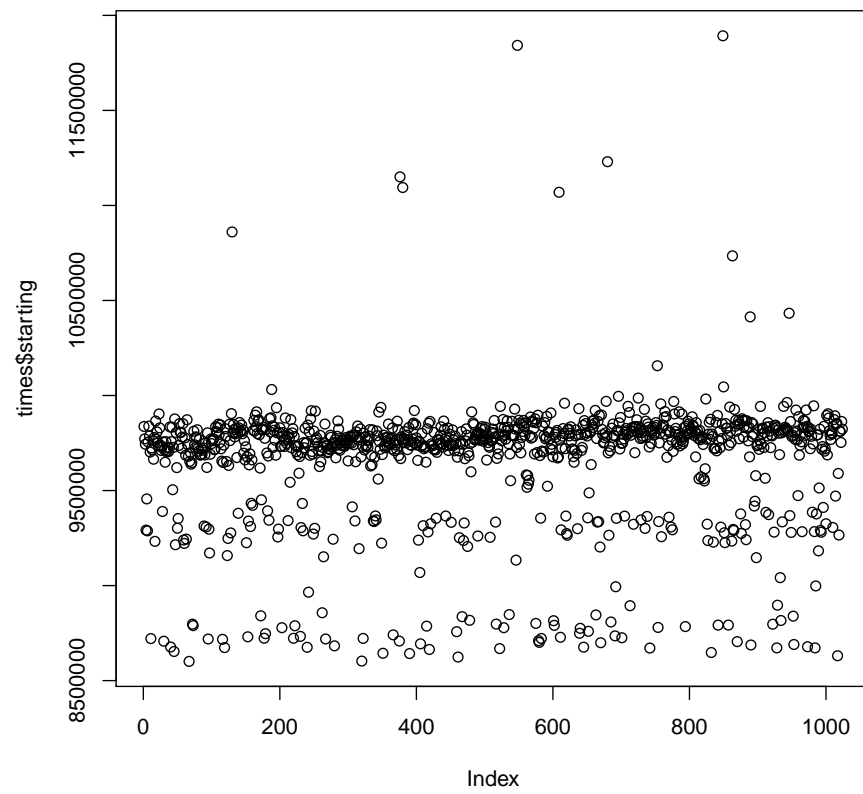
To achieve our goals, we used a serie of specially crafted CUDA kernels. These usually contain large batches of dependent instructions that we time with the assistance of the `clock64()` function offered by the CUDA API.

The benchmark programs were run on a machine equipped with a: Nvidia GeForce GTX 580.

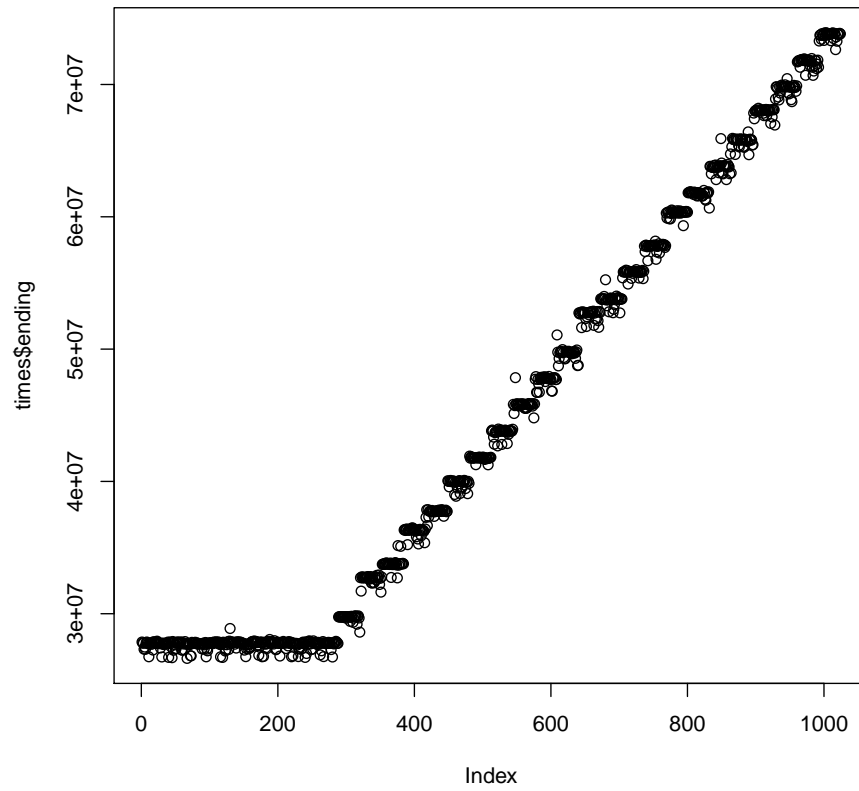
3 Integers multiplication benchmarking

This section contains results obtained through the previously described methods using large batches of integer multiplication

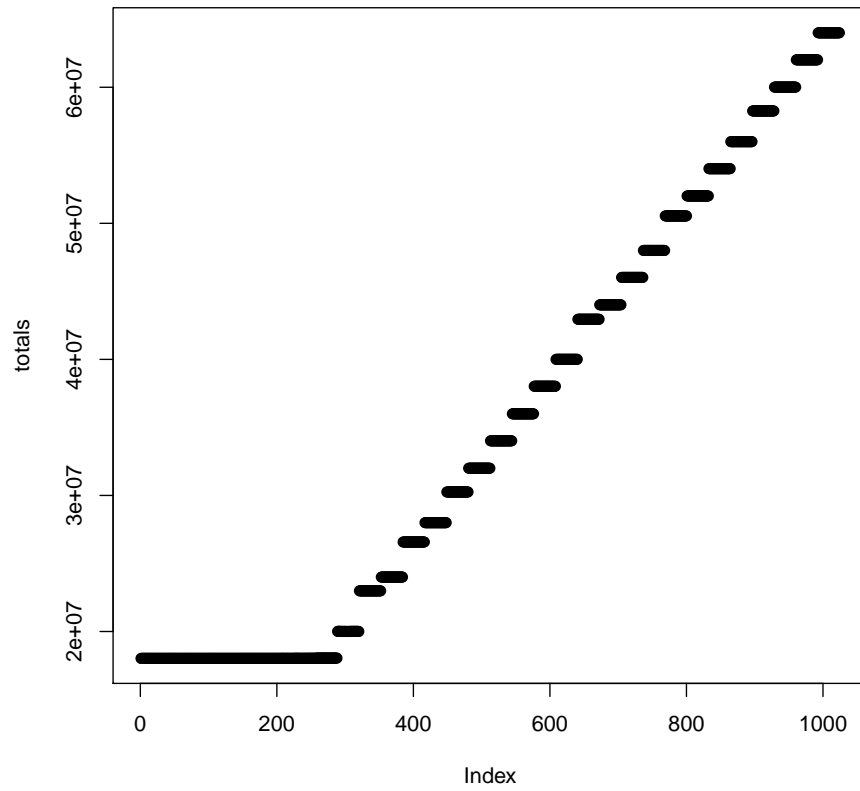
3.1 Integer multiplication: threads starting times



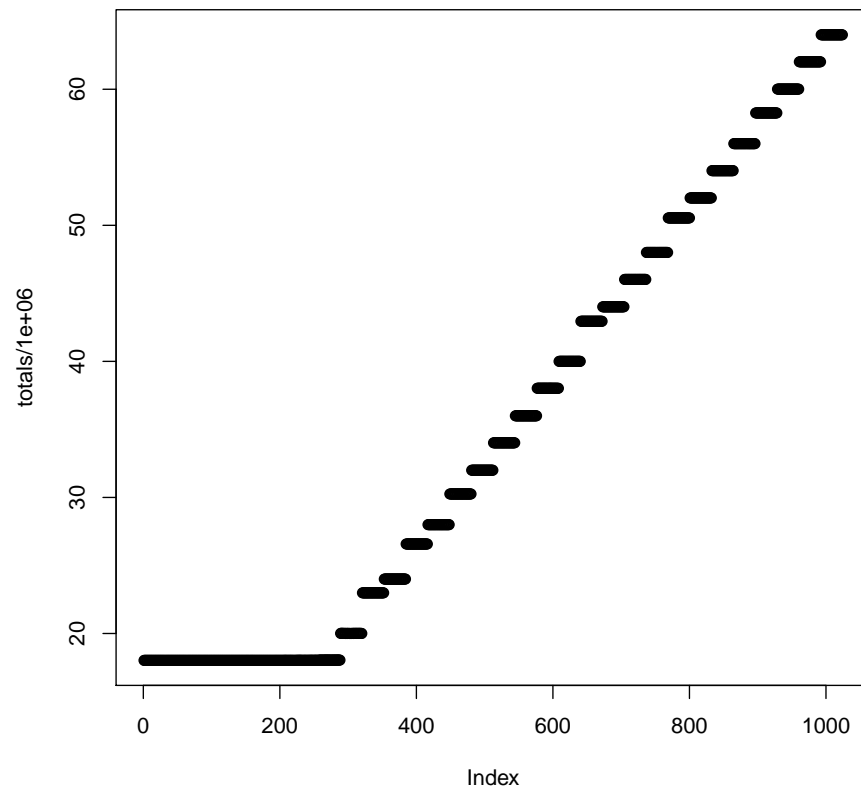
3.2 Integer multiplication: threads ending times against thread ids



3.3 Threads total running time against thread ids



3.4 Threads running times divide by number of multiplications



4 Interpretation

5 Conclusion