



# Fast Benchmark

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# Fast Benchmark

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- ▶ Request mainly from WLCG community via machine/job task force to recommend a fast benchmark to estimate the performance of the provided job slots, since some sites don't disclose performance scores or hardware details
- ▶ Requirements clear
  - ▶ Open source
  - ▶ Easy to run
  - ▶ Fast (few minutes)
  - ▶ Small, no download (apart from first download)
- ▶ Requirement not clear
  - ▶ Reproducible? Reliable?
  - ▶ Single core or multicore?
- ▶ Use Cases
  - ▶ Run everytime we land on a queue/VM/Cloud machine?
  - ▶ Run to sample the resources available?
  - ▶ Run to crosscheck is the HS06 declared are reliable?

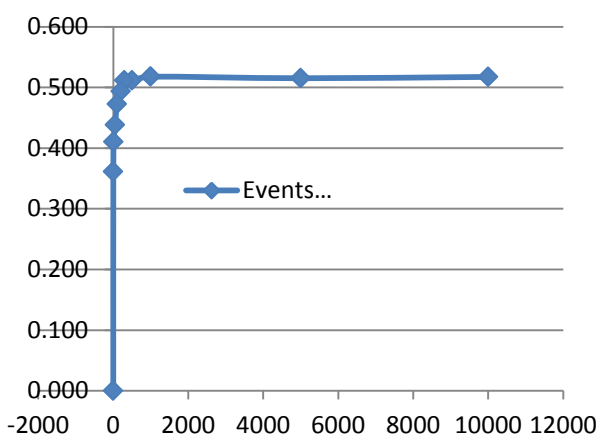
# An example with Geant4

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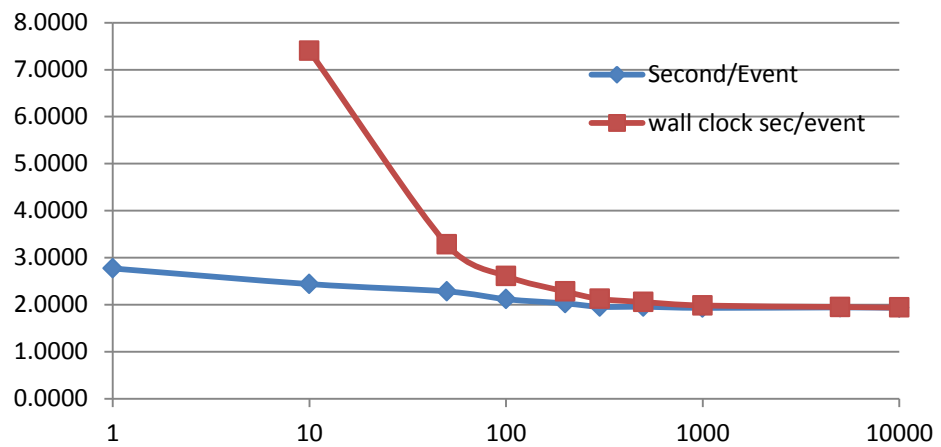
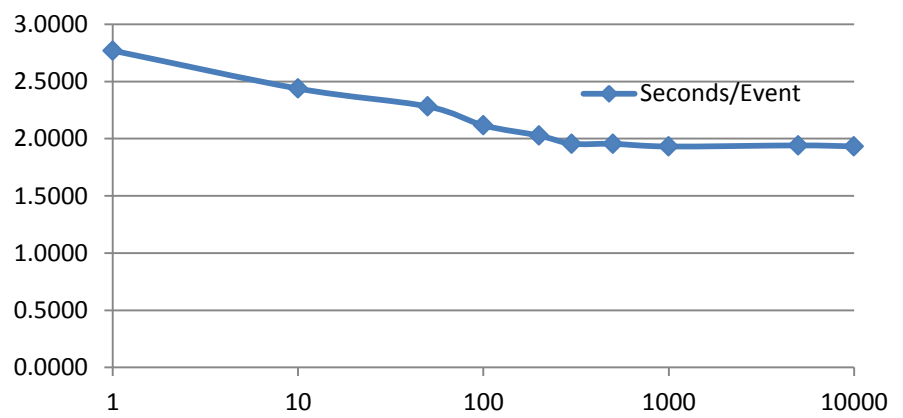
- ▶ Thanks to G.Cosmo and A.Dotti
- ▶ Based on Geant4
  - ▶ Runs on linux x86-64 and ARM
  - ▶ realist description of the geometry of the detector
  - ▶ footprint 1/3 to 1/4 of real experiment
  - ▶ No digitization, no analysis.
  - ▶ Cpu bound, no I/O
- ▶ Download a bootstrap.sh script from Cern
- ▶ Running the script download the rest of the program and compile (5 – 10 minutes)
- ▶ ./run.sh <numThreads> <numEvents>

# Single core

### Events/second

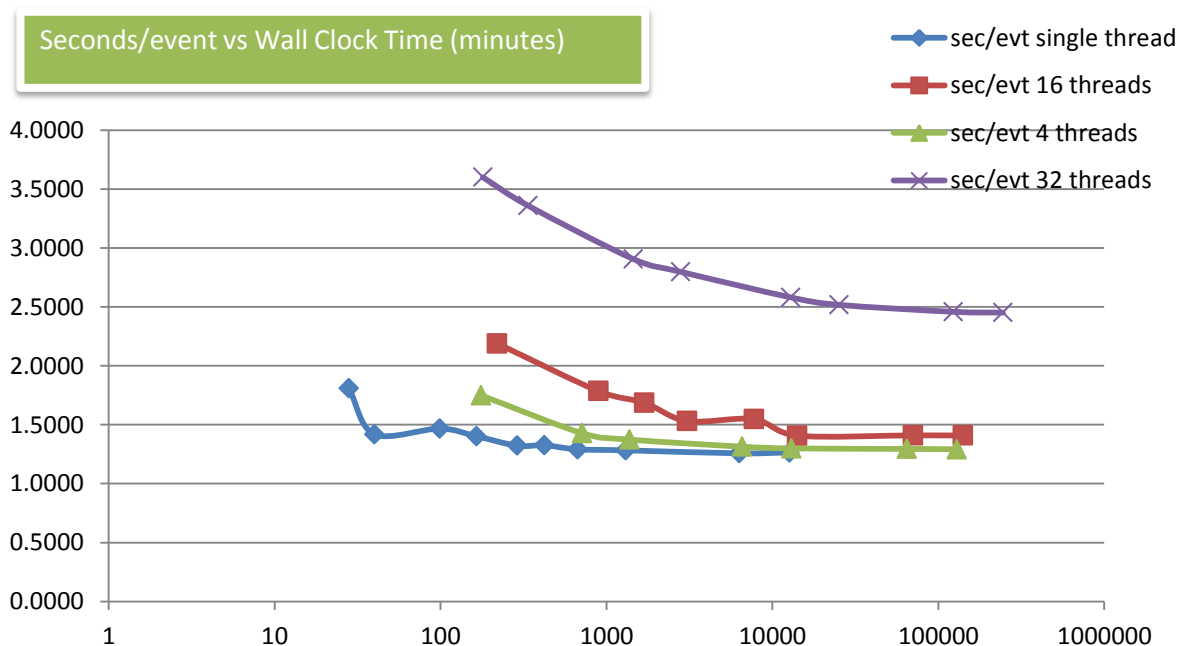


### Seconds/Event



# Multicore

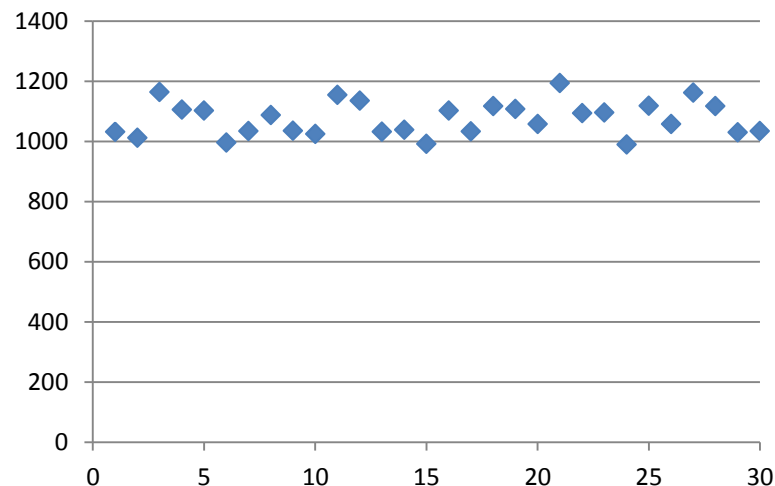
- ▶ We have 32 Logical CPU
  - ▶ I'm forced to use to wall clock time from the shell instead of the Real Time computed
  - ▶ Now it takes more time to a steady number



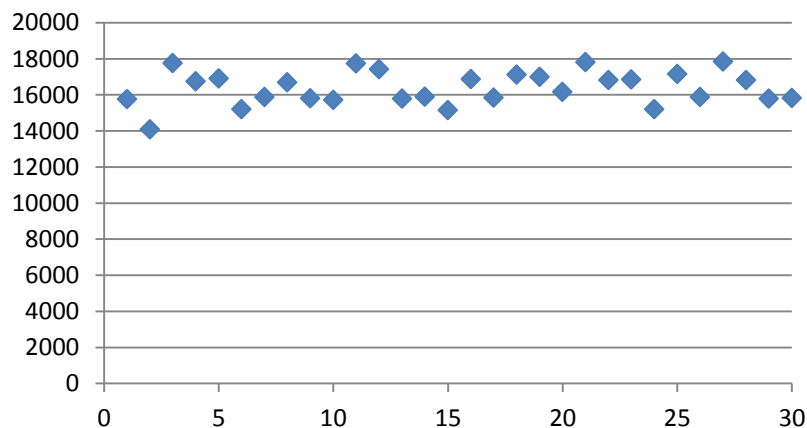
# Variance

- ▶ Xeon E5-2660 16C / 32Lcpu
  - ▶ 16 thread in parallel, 10Kevts, about 20 minutes
  - ▶ Average Wall clock time 1077 Stdev.S = 58
  - ▶ Average User time 16498 seconds
  - ▶ Stdev.S = 976

Wall Clock Time

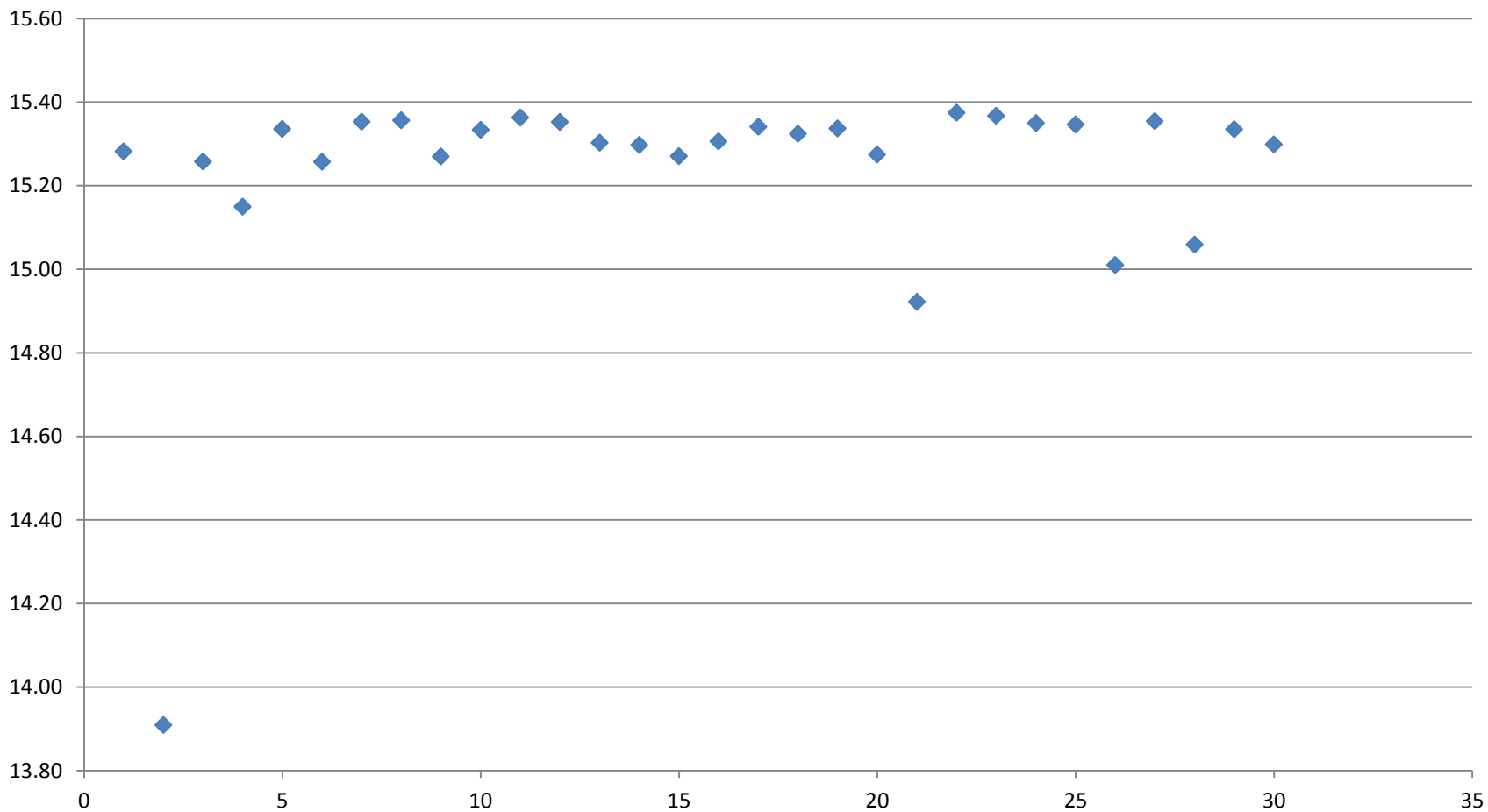


User Time



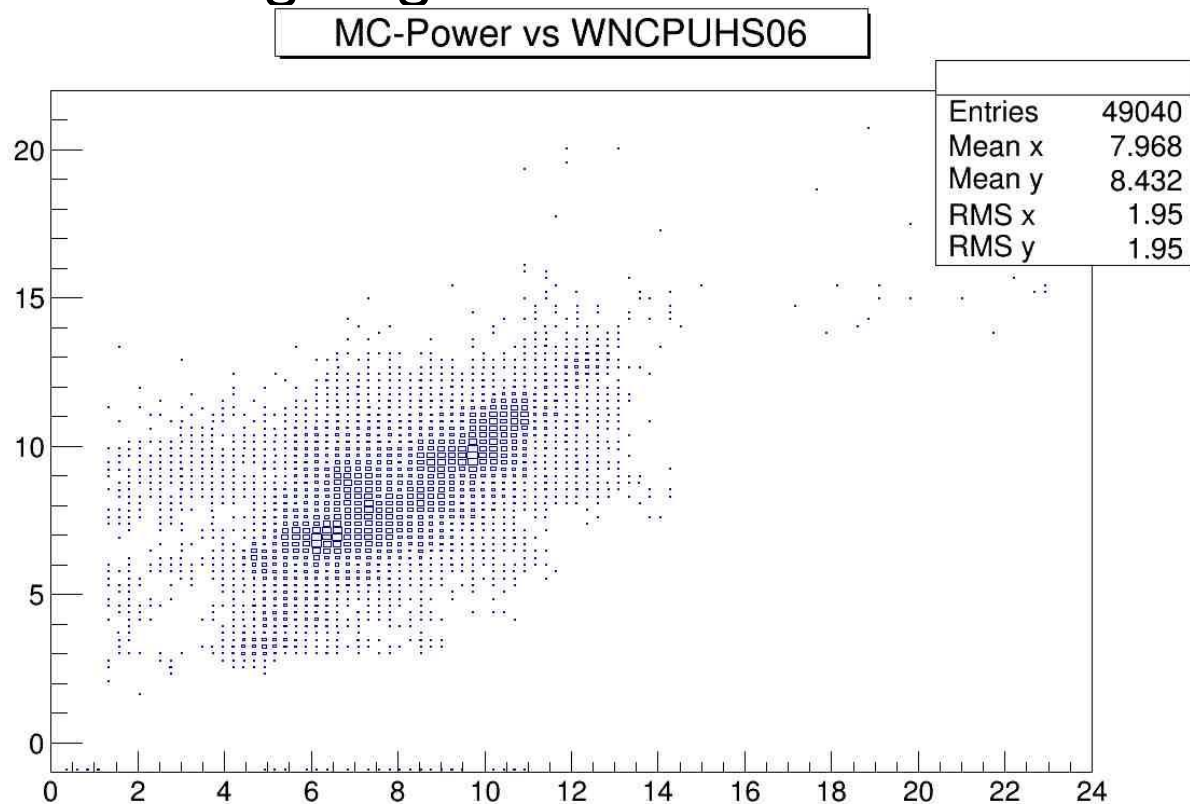
# User time / Wall Clock time < 16

User/Wall Clock



# LHCB fast benchmark

- ▶ New contact with P.Charpentier (LHCB) provided by Manfred Alef
- ▶ Manfred is investigating this tool





# HS14 update from Manfred Alef

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- ▶ **HS06 based on widely used, industry standard, SPEC CPU 2006**
  - ▶ SPEC is shipping well tested tools, on several architectures, professionally maintained
  - ▶ Very stable: 3 minor version in 8 years
  - ▶ Hardware vendors and technical press are familiar with it
  - ▶ Widely adopted in GRID, WLCG and also other scientific communities

# Next version coming ~~soon~~

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- ▶ Benchmark tests need to be revised to reflect improvements of hardware
- ▶ SPEC is working on the next revision of CPU intensive benchmark suite currently designated as CPUv6
  - ▶ after original specmark, SPEC92, SPEC CPU95, SPEC CPU2000, SPEC CPU 2006, this will be the 6<sup>th</sup> version.
- ▶ KIT is an SPEC OSG associate and had the CPUv6 in beta (closed source, no permission to redistribute)
- ▶ GridKa will provide a config file to run the benchmark on SL and GNU
  - ▶ CPUv6 is running with SL6 default compiler gcc-4.4.7 but not all the tests
  - ▶ however SL7 is coming with gcc-4.8.2
  - ▶ Using gcc-4.9.0 all the tests compile



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