XFEL HPC Computing Issues
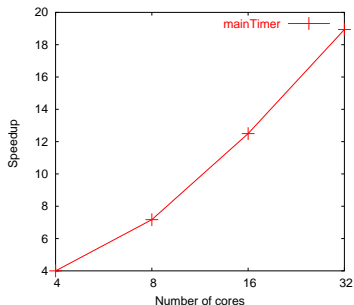
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HPC Hardware:

- Merlin at PSI 4-core blade cluster GigE (48 cores)
- Horizon appr. 3200 cores

OPAL-T kernel is scaling up to 8k processors CSR track .5 k!

Followup projects (Ph.D thesis) are also cpu hungry!

CSR and 3D tracking studies will need lots of cycles in the future:

- CSR (F. Stulle): ≈ 250 kCPU $\cdot$ h using 500 cores
- 3D Tracking studies OPAL-T : ≈ 200 kCPU $\cdot$ h in 2008

Estimates are given for 2008.

Note1: one 250 MeV injector simulation needs $\mathcal{O}(\ 0.7$ kCPU h)
Note2: Injector error studies running out of CPU hours (S. Russel)
Note3: ≈ 450 kCPU $\cdot$ h are $\mathcal{O}(1/4)$ of the PSI Horizon budget !

- File in CSCS Large user Account Application (end of March)
- Buy in to Merlin on a bases of: 32 ... 64 cores with fast network (have already asked AIT for a quote)
- Make PSI particle accelerator modelling and in particular XFEL simulation a strong driver in the PSI HPC strategic planing (PSI-Report in progress)