

Phd Meeting 27/10/2017

- Helga re-defining PhD of Konstantinos
 - Same targets as initially
 - Combine available hardware to accelerate the code BlonD
 - What will make these studies interesting for microlab too?
 - FPGAs: Are they applicable to our code?
 - Simulation is a turn-by-turn process
 - Sotiris: It is not so irrelevant, we can try to use a dataflow model
 - at least for some parts of the code the FPGAs could be useful
- Sotiris regarding the PhD goals
 - Path 1:
 - What commercial machine configuration would be the best?
 - What is the optimal SW mapping?
 - Path 2:
 - Super customizable architectures
 - What is the optimal configuration given infinite flexibility?
- Sotiris Slides:
 - 2 axis:
 - Work on something purchasable
 - Work on something non-existent but would lead us to the optimal results
 - Phase 1:
 - Optimizing the SW
 - Phase 2:
 - So far we optimize for multicores → scale out
 - Accelerator based performance optimizations
 - not only CPUs but also GPUs, Xeon Phis, FPGAs
 - Open Question in the field of beam dynamics:
 - How does the code performs in heterogeneous HW?
 - Study an ideal infrastructure
 - First build the simulation code
 - then run the tests
 - Last step: Go WAKI (wild and crazy ideas)
 - ML for BlonD
 - Approximate computing
 - etc
 - Reading list:
 - Supercomputing:
 - ISC
 - Journal of Supercomputing
 - Runtime systems with a more generic impact:
 - IEEE MICRO
 - ISCA
 - IEEE TC
 - ACM TOCS

- ASPLOS
 - HW accelerators
 - DAC
 - DATF
 - ASP-DAC
 - Learn the community: news from HPC labs, Lawrence, Julich, NVIDIA, CINECA, Marenstrum etc
- Helga on first publication
 - Konstantinos collect all the material up to now
- Is our code ready for a large scale scale-out?
 - Start with the HW accelerators
 - then extend to the more theoretical side
 - Sotiris: Still we can manage to come up with a good solution
- Next meetings:
 - 1-2 slides on the process on each of the 4 boxes (phd phases)
- Next meeting in a month ~30/11
- **AP** Konstantinos: Build a breakdown list for each of the boxes