

Project for CSE students

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Write a fast hybrid code

(Any combination of SIMD, threads, MPI, GPUs)

- 3D Diffusion + Matrix-Matrix Multiplication
- Vortex Methods in 2D
- ADI for Reaction-Diffusion Systems
- Parallel Granular Flow
- Uncertainty quantification
- Propose your own (contact your TA)

Project for CSE students

- Groups of 2 students (individual report!)
- Benchmarks will be executed on Piz Daint
 - Cray XC30: 5'272 nodes with *Nvidia Kepler GPU*
 - 7.8 PFlops peak performance
- Accounts available starting today



Office hours

- Teaching assistants are available for project discussion during office hours:
- Tuesday 15 - 17

Evaluation

- Hand in a short report on the project before the beginning of the exam session 03.08.2015
- Oral exam:
 - present the project (no slides, just report) [10min]
 - general questions [20min]

Report

- The report **IS NOT** evaluated
- Describe
 - what the application does
 - the parallelization strategy you used
- Play around with number of threads, processes, etc.
- Provide benchmark plots (scaling)
- Discuss possible different parallelization strategies
- Report your energy consumption
- Do not be shy report failed attempts, too !!