EuroHack 18
Team OXIM

Feng Wang[1], Ioan Hadade[1], Simone Atzeni[2], Francois Courteille[2]

[1] University of Oxford, UK
[2] NVIDIA

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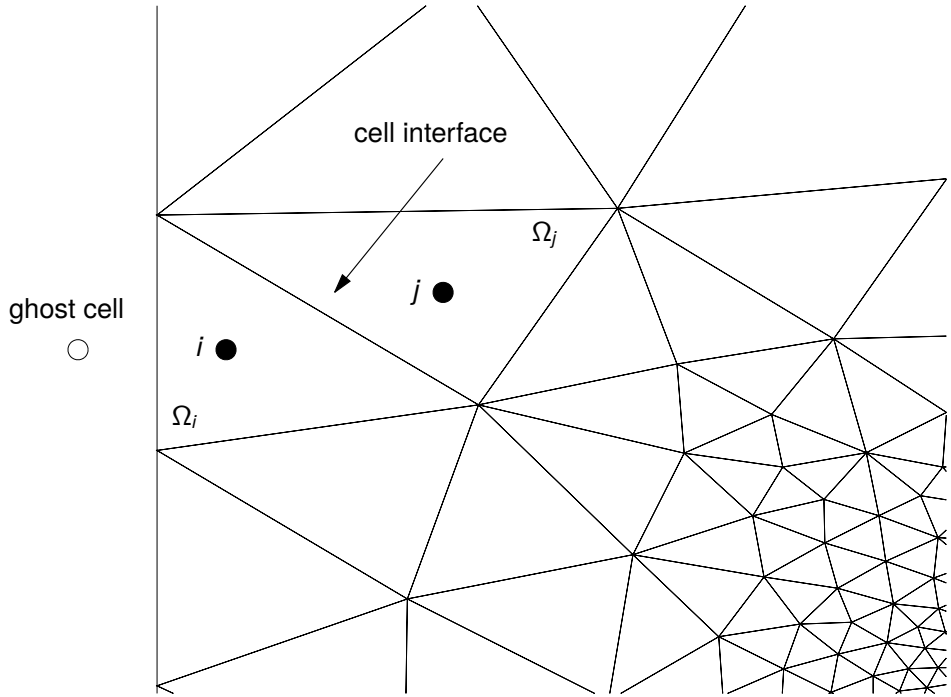
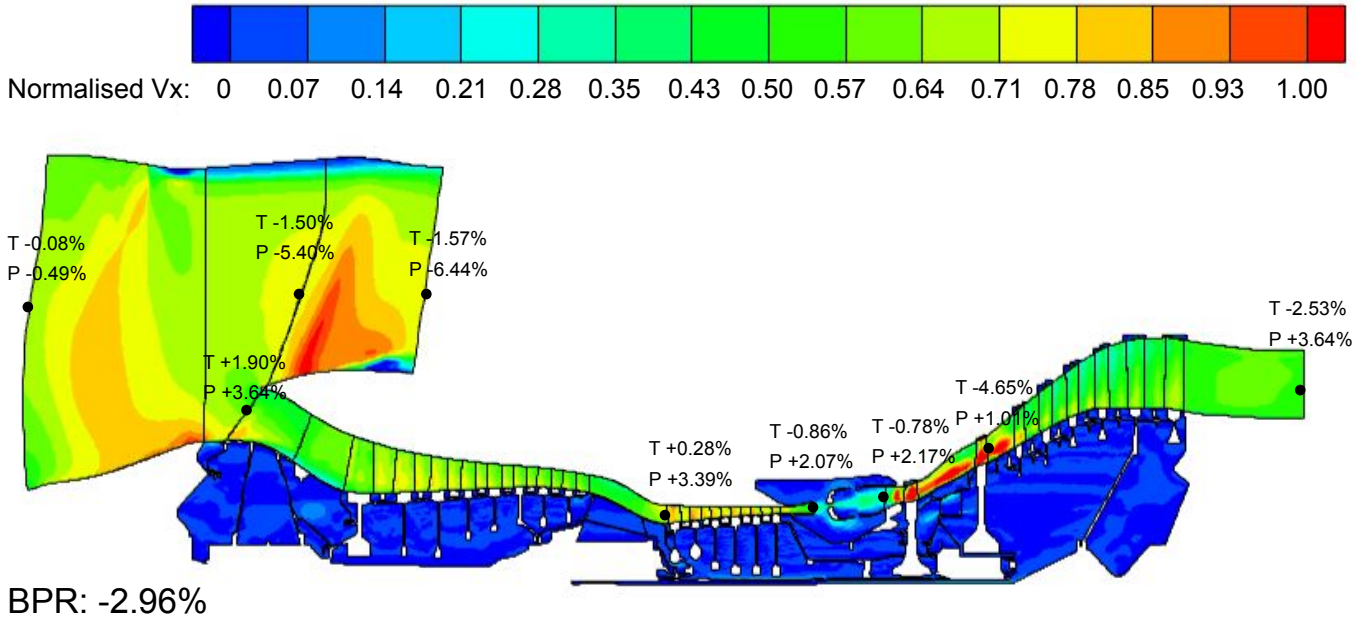
AU3X

- cell-centred finite volume on unstructured grids
- implicit and explicit time-integration schemes.
- LES and RANS capability.
- Fourier-based methods.

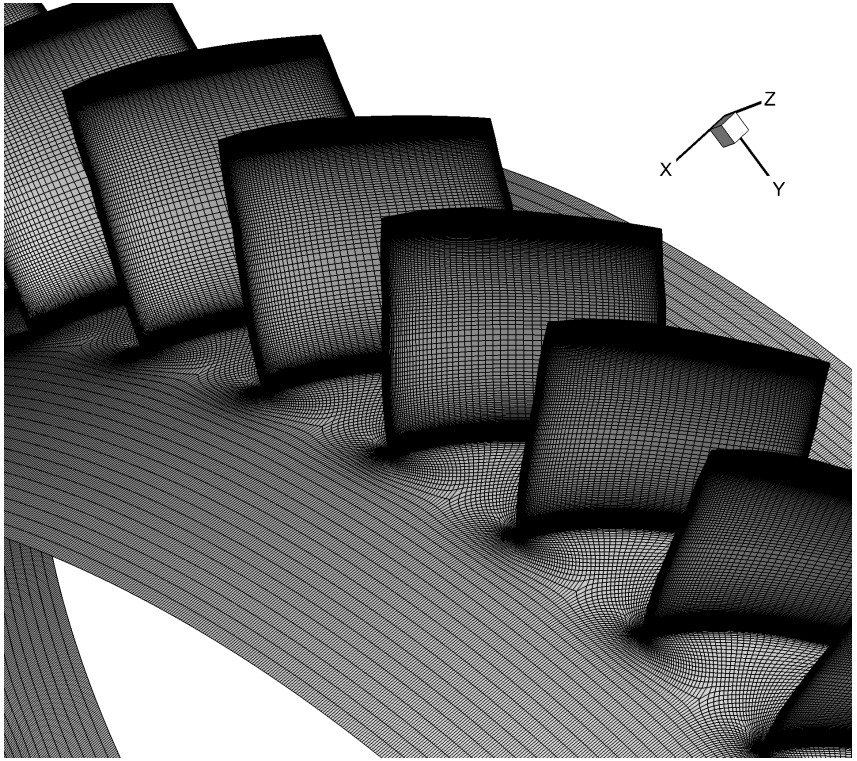


Example: whole jet engine aerodynamics

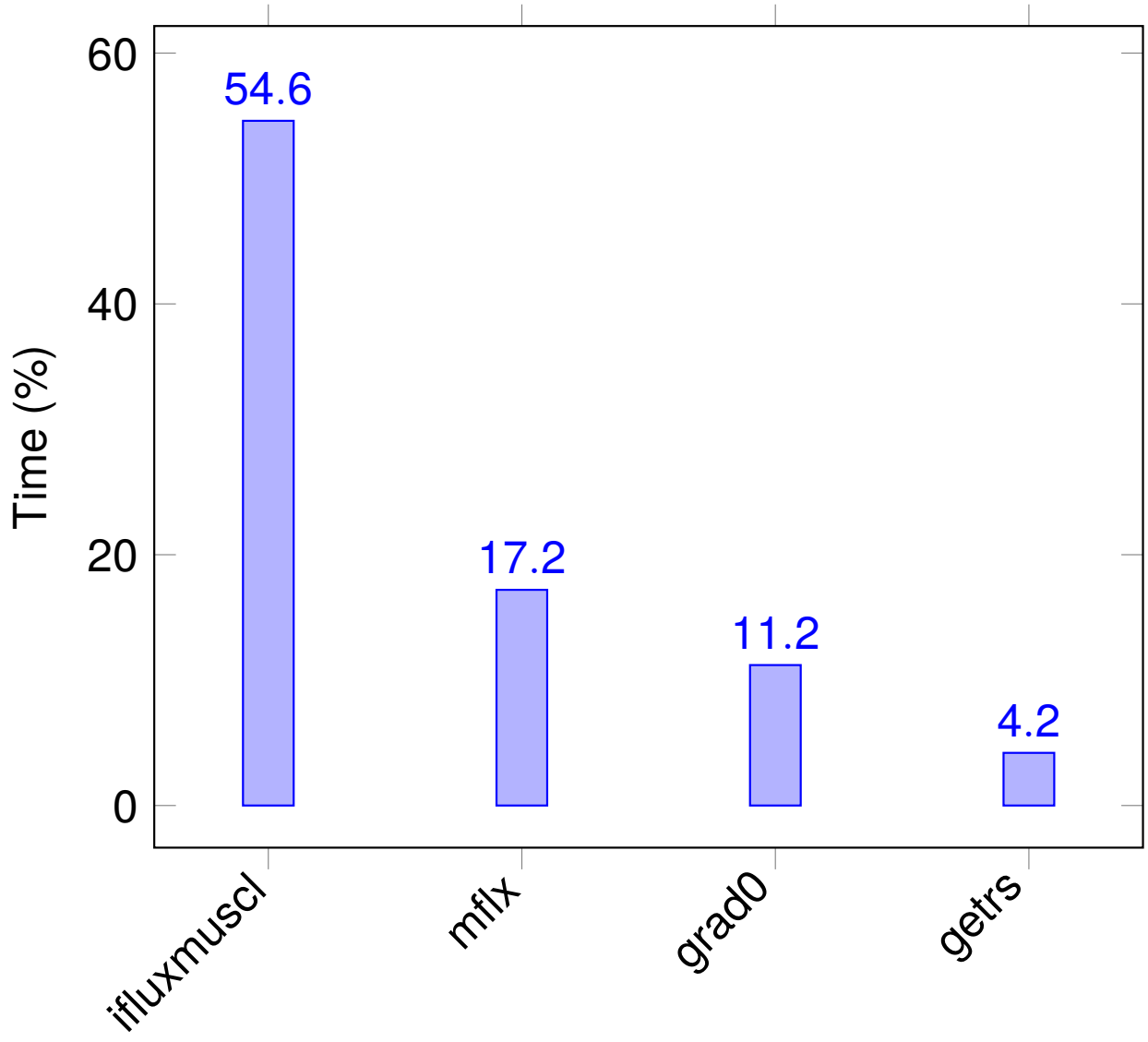


Test case

- NASA ROTOR37
- Combination of single passage, 25%, 50%, 75% and full annulus for single GPU and multi-node weak and strong scaling
- 3-stage Runge Kutta (explicit)
- Roe's approximate Riemann solver
- 2nd order TVD MUSCL scheme



Computational profile



Computational profile

- 80% of time spent in face-loops
- the remaining time is spent in cell-loops or I/O
- therefore, porting the face-based loops first to the GPU should have the highest impact on performance
- after that, we also need to port the cell-based loops as the bottleneck will invariably shift to those kernels

Preliminary results (ifluxmuscl)