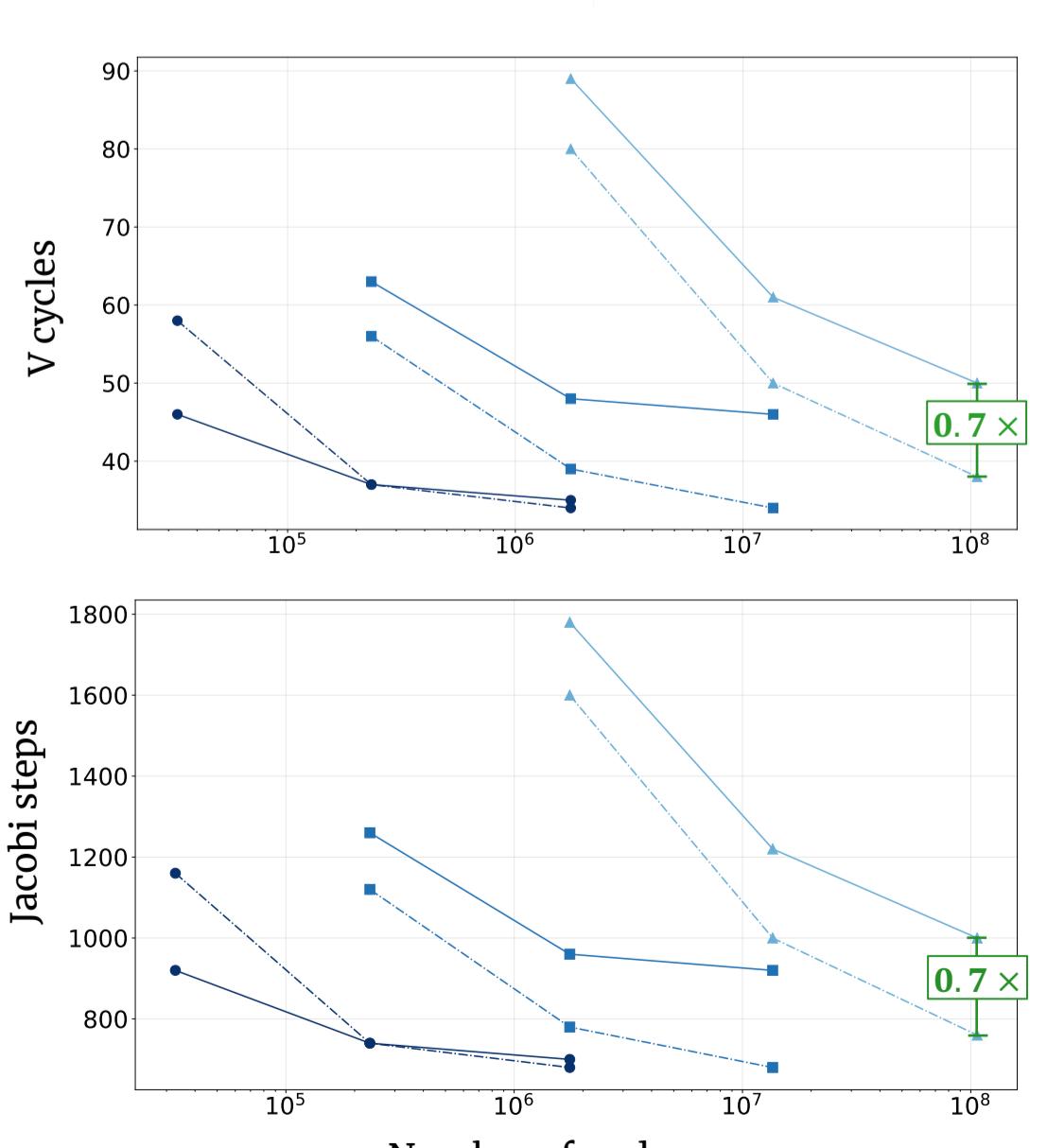
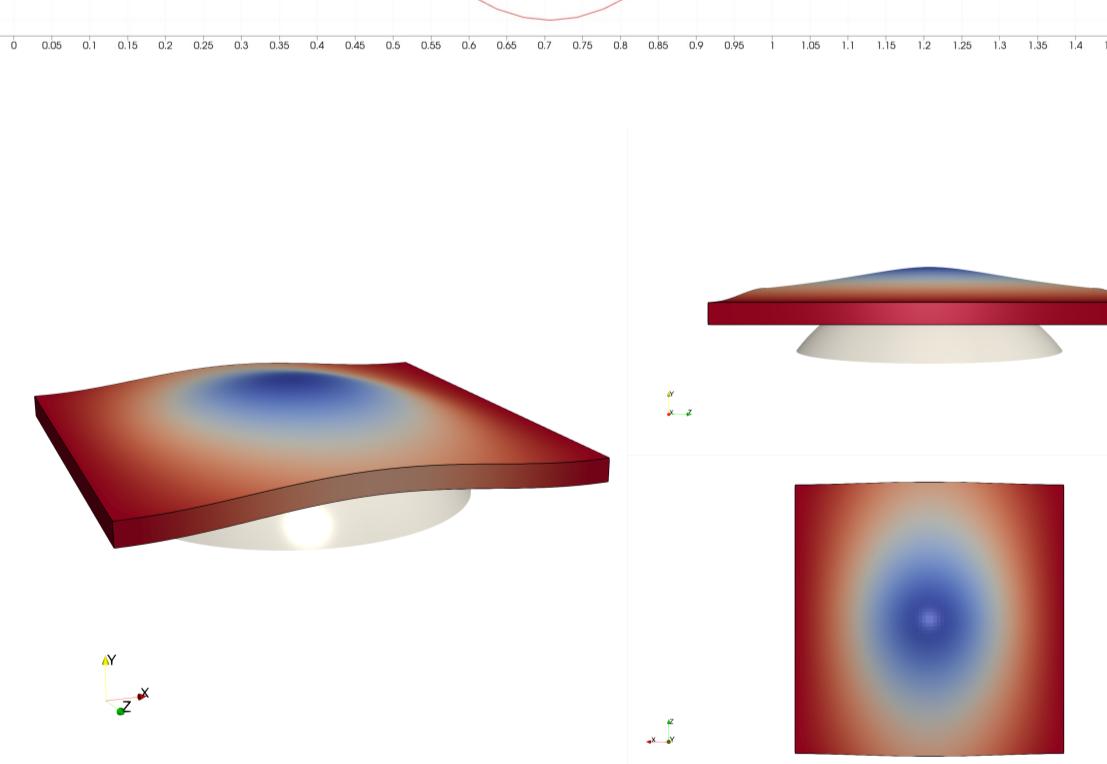
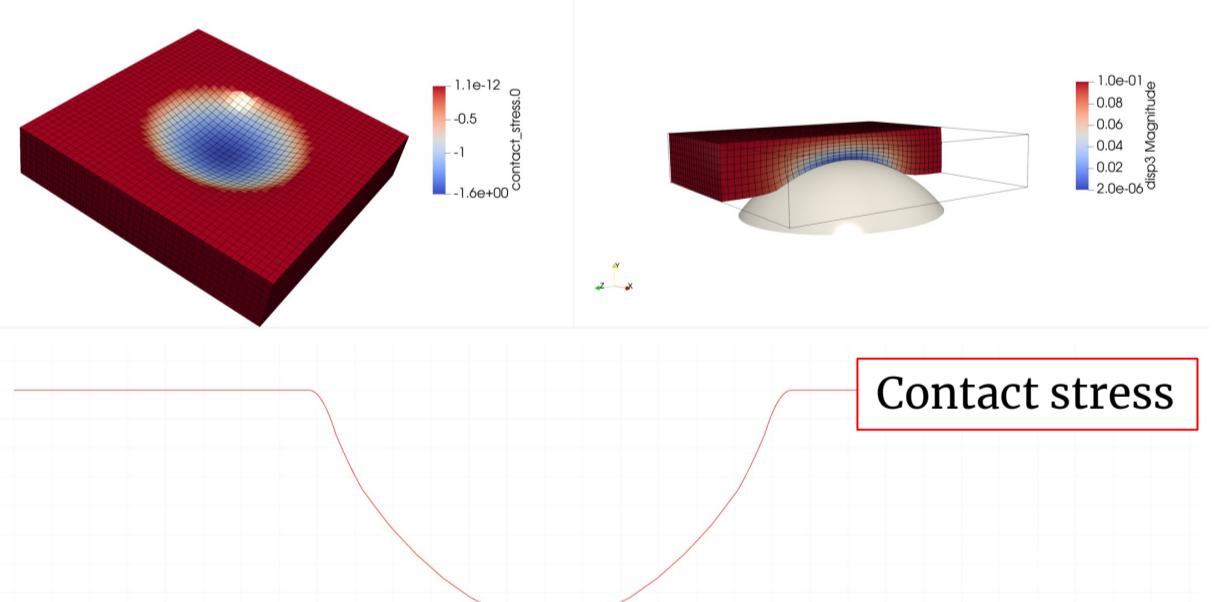


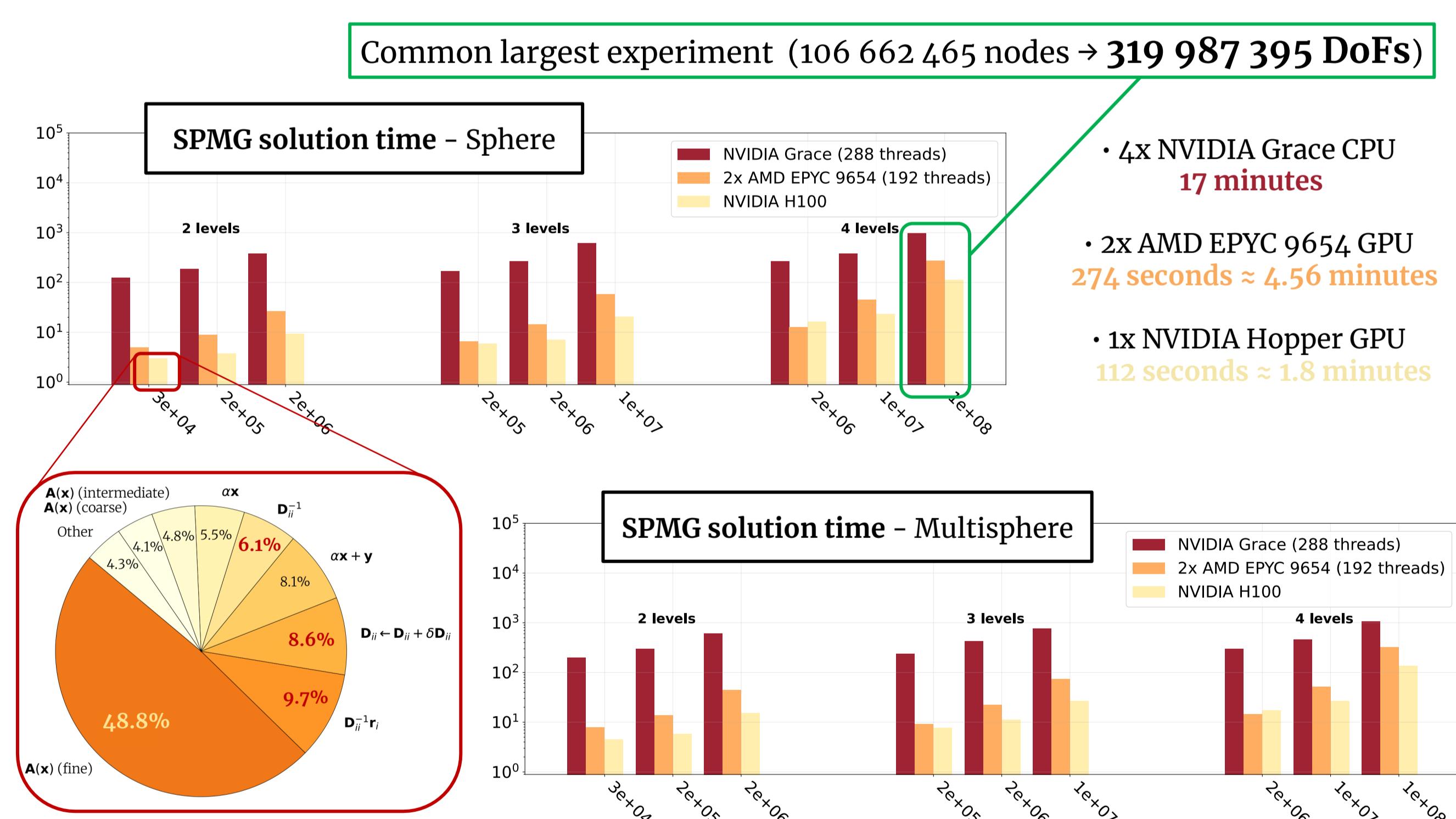
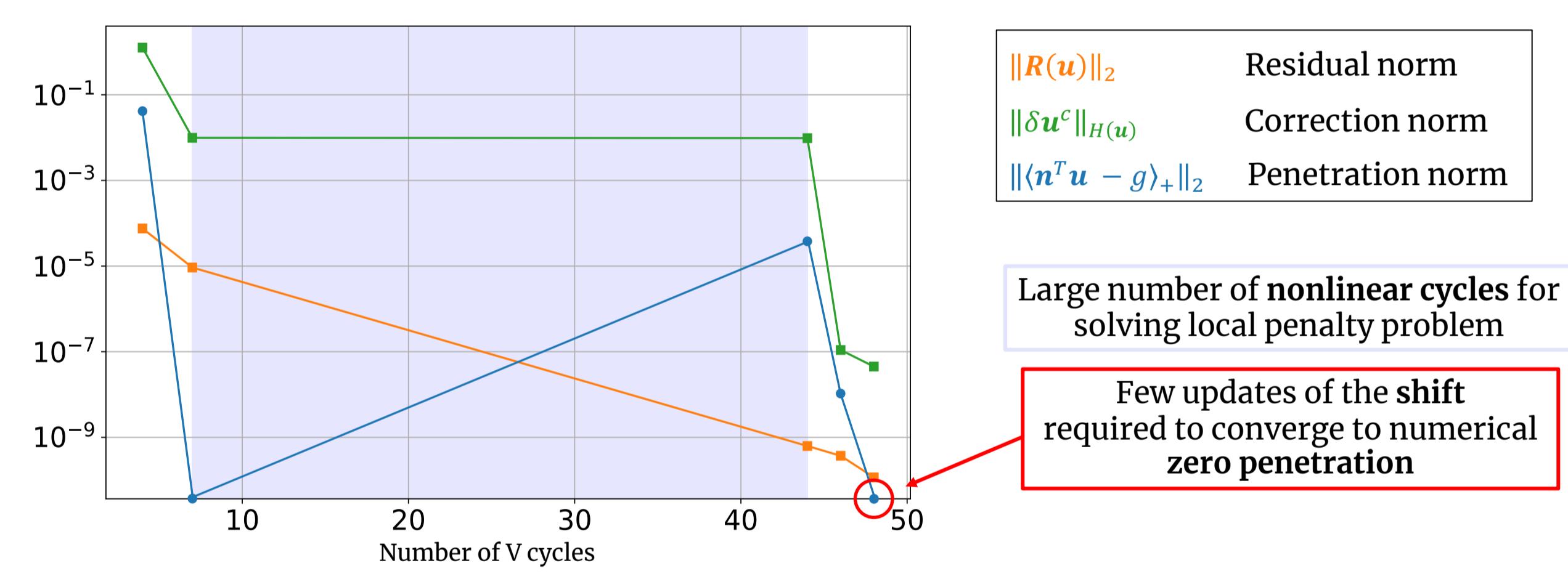
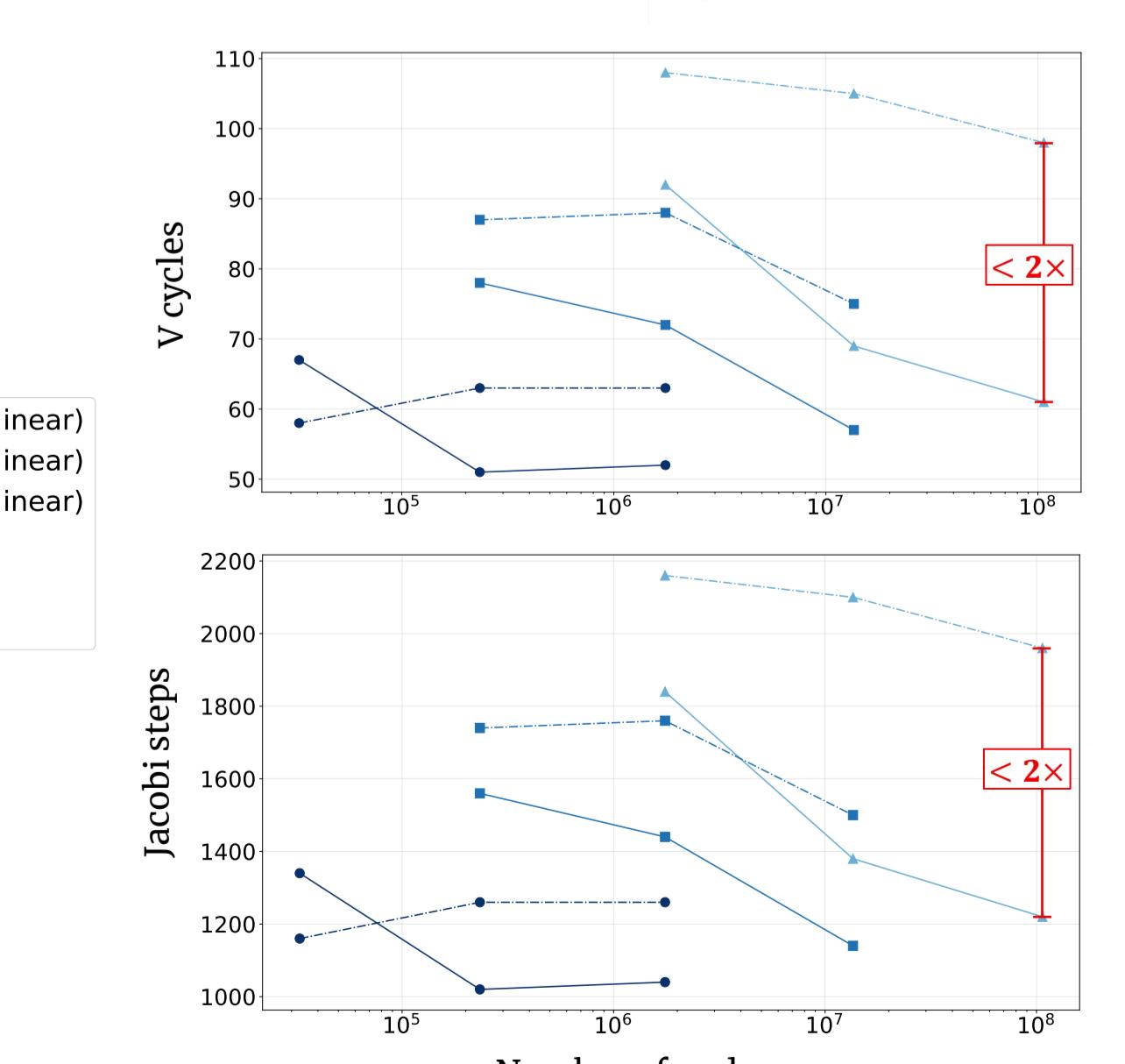
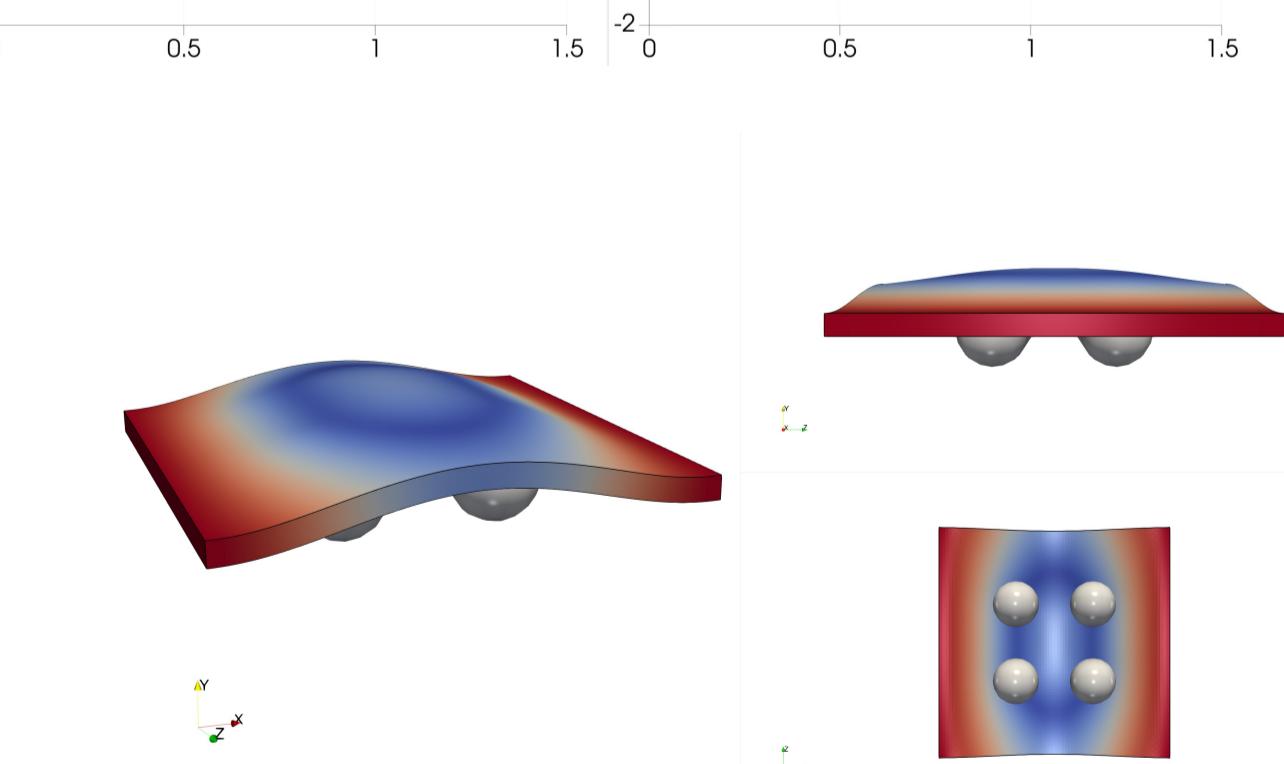
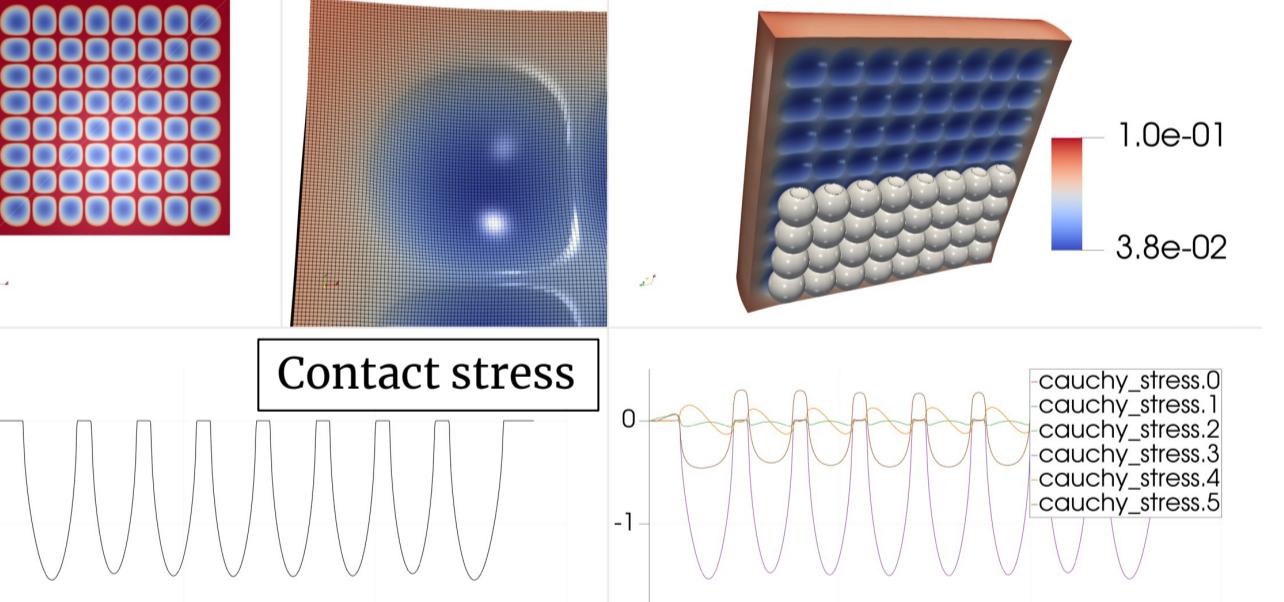
## PERFORMANCE ANALYSIS - two simple experiments

- Block-Jacobi smoother (3 x 3 blocks), 10 pre- and post-smoothing steps
- Residual and penetration norms tolerance  $10^{-9}$  (both satisfied)
- Conjugate Gradient with Block-Jacobi preconditioner for coarsest space solution, relative tolerance  $10^{-6}$

## One Sphere problem



## Multisphere problem



## Room of improvement in GPU implementation

- Inefficiencies
  - Thread-level: 7 [GDOF/s] needed for level 4
  - Warp-level: 10 [GDOF/s]
- NCU reduced clock frequency 1.51 < 1.98 GHz for reproducibility → real throughput is higher
- Uncoalesced memory access in Block-Jacobi
- Missing kernel fusions

