Updates on IPPL 2.0

OPAL developers meeting

S. Muralikrishnan on behalf of the IPPL team, 07.09.2023

Dimension Independence

M. Sc. thesis of Alessandro Vinciguerra

- IPPL is now dimension independent and supports 1 to 6 dimensions

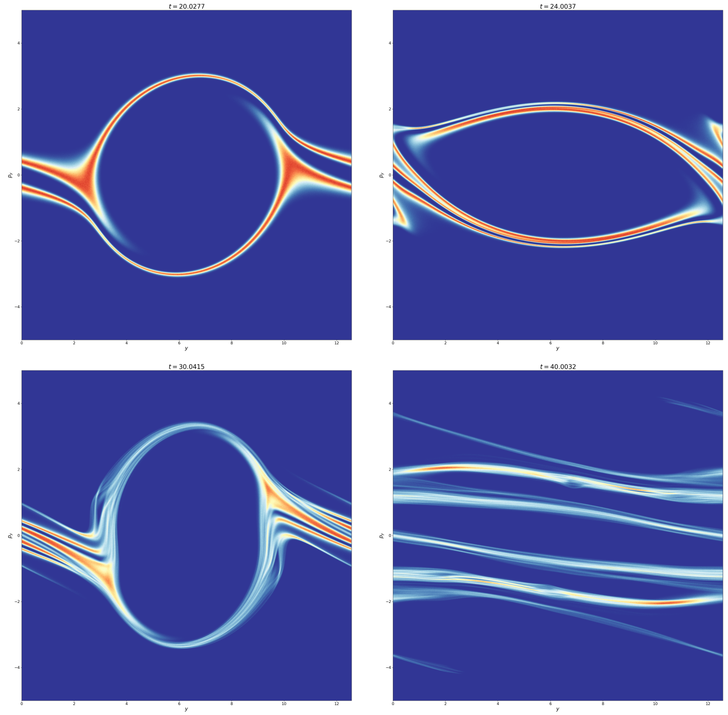

Figure 4.6: Phase space for the two-stream instability at late stages.

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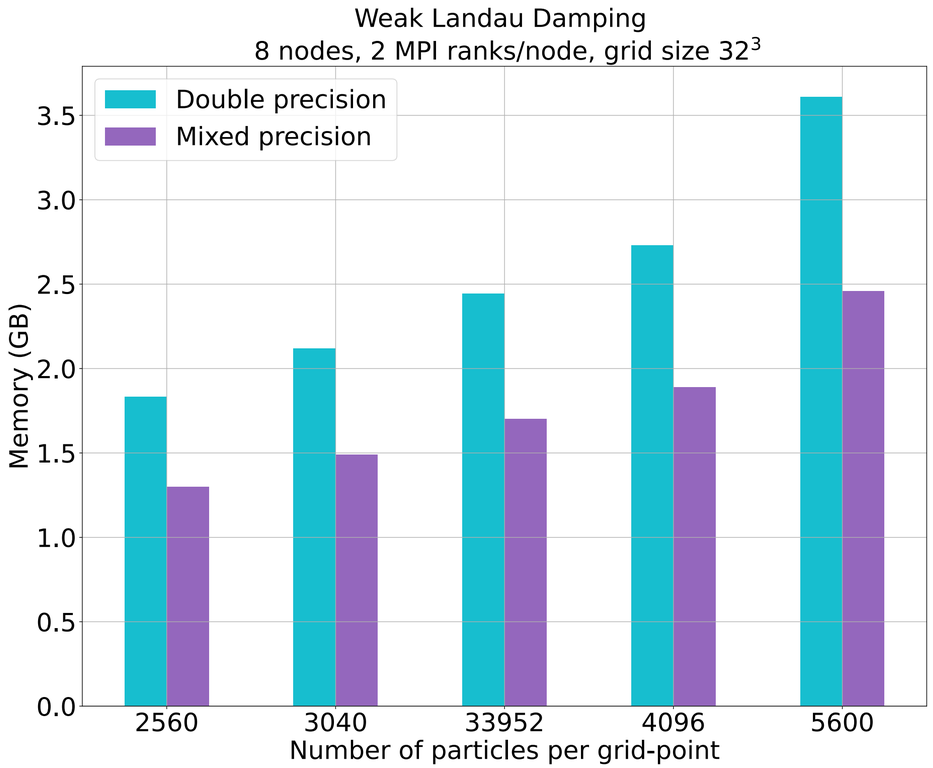
Mixed-Precision

M. Sc. thesis of Veronica Montanaro

- We can now do mixed-precision



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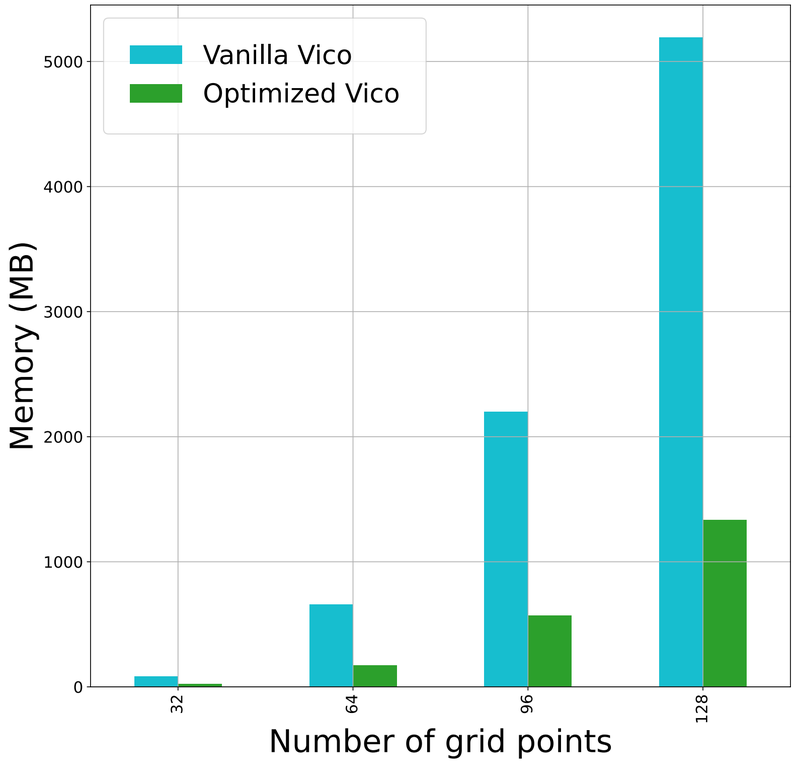
Optimized spectral free space solvers

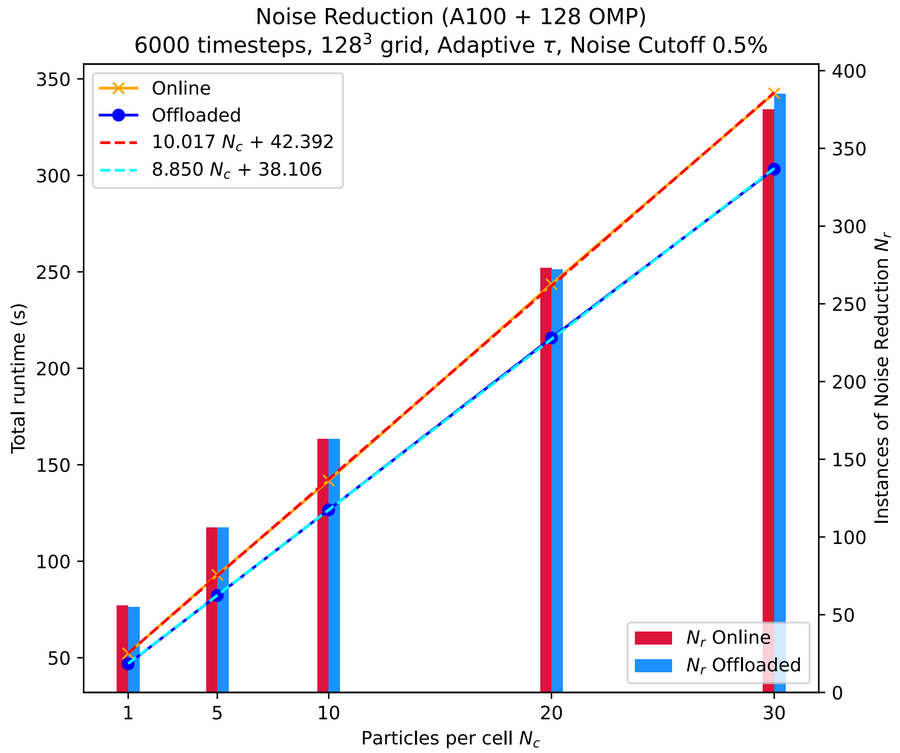
M. Sc. thesis of Veronica Montanaro



Mixed-Execution spaces

M. Sc. thesis of Alessandro Vinciguerra

- Concurrent execution of tasks in host spaces and different accelerators for efficient utilization



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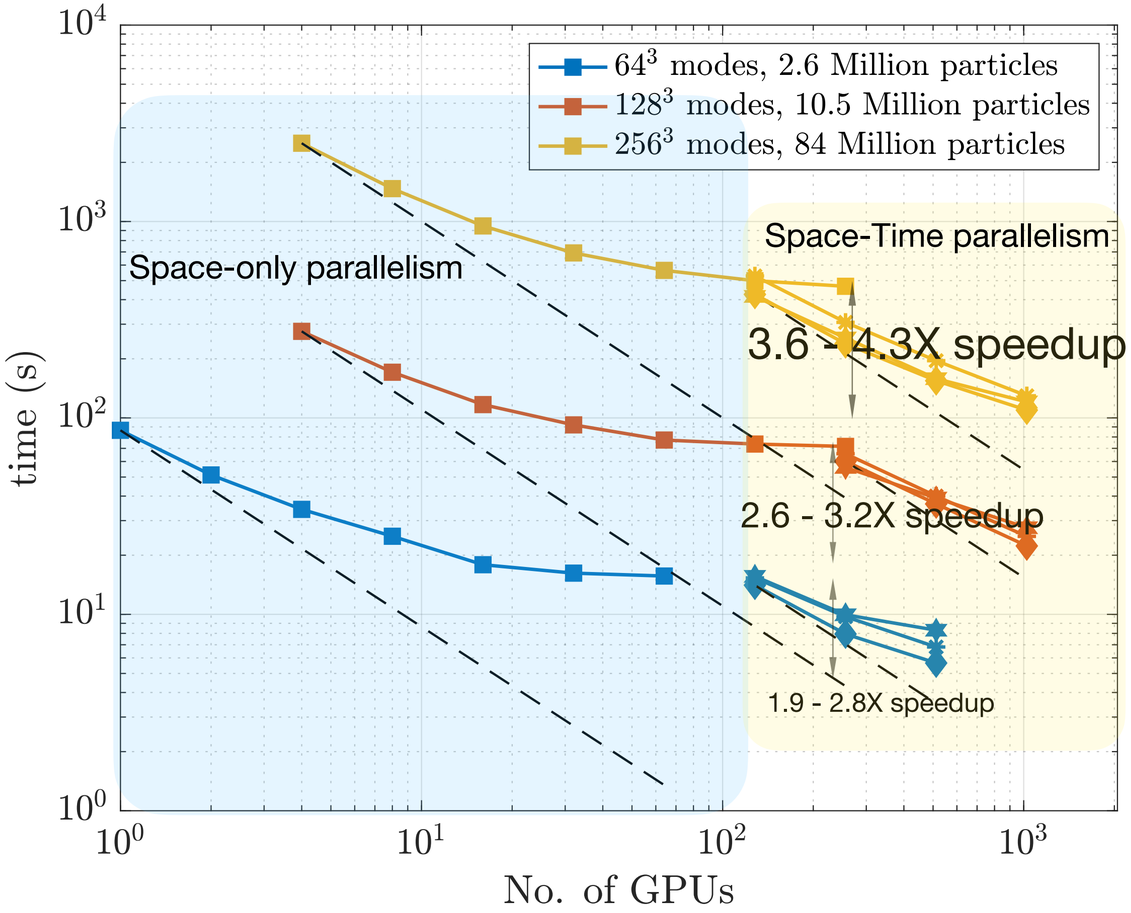
New Algorithms

Parallel-In-Time with Particle-In-Fourier (S. Muralikrishnan, R. Speck)



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In-situ visualization and analysis

Ongoing with F. Schurk

- Paraview and Catalyst2 based interface
- Good progress
- Pictures to come…

Other things…

- IPPL moving from gitlab to GitHub (M. Frey)
- Redesign of IPPL software design for OPAL-X and others (M. Sadr and M. Frey)