

M3D-C1 ZOOM Meeting

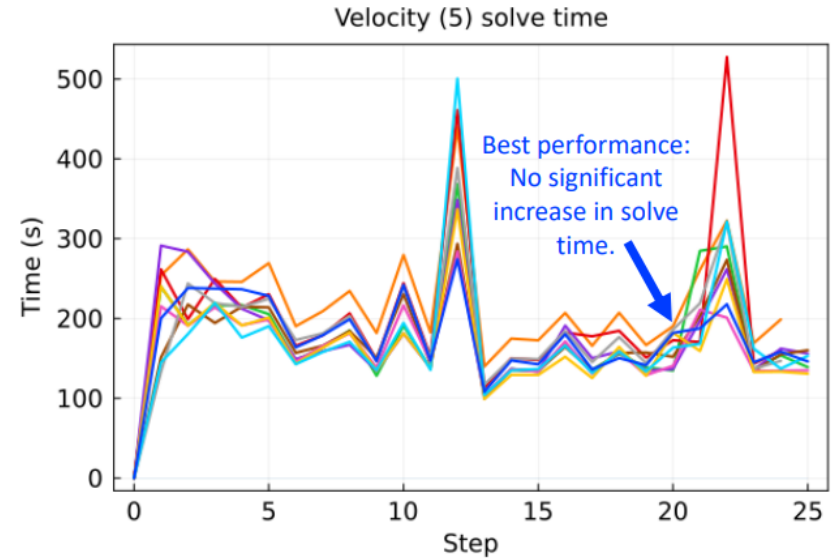
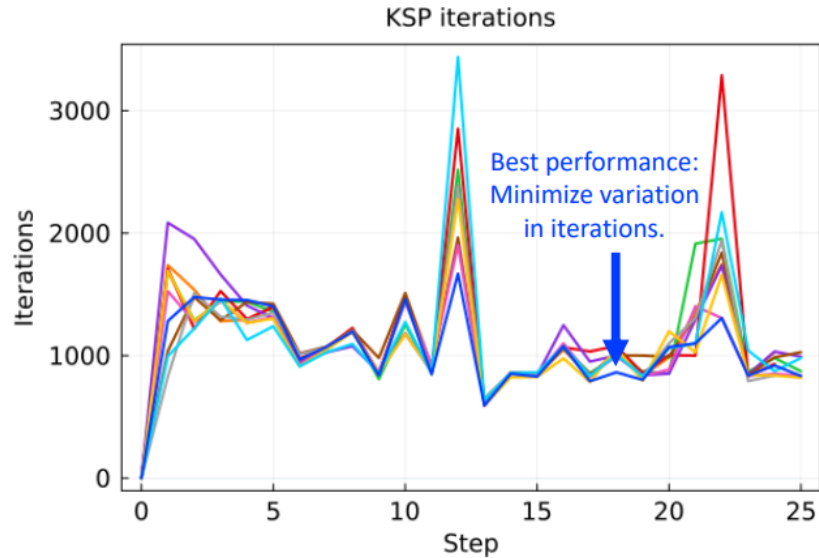
02/06/2023

CS Issues

1. BGMG results and scaling -- Jin Chen
2. LBL Report

Testing BGMG preconditioner on hard-to-run stellarator cases.

- In stellarator geometry, 5 (velocity) is the difficult solve.
- Without BGMG, the QH case does not run (5 diverges at first step).
- With BGMG preconditioning on 5 (`nplanes=64`):



Best performance when: `rtol` $\rightarrow 0$ ($10e-11$ compared to $10e-9$ or $10e-10$) and `GMRES_restart=100`.

- Decreasing `rtol` doesn't significantly increase solve time but reduces variation in iterations.
- This suggests that for these problems, a very good initial guess (coarse solution) is required to maximize efficacy of preconditioner on the full matrix.

In attendance

Steve Jardin

Brendan Lyons

Adelle Wright

Andreas Kleiner

Jin Chen

Chen Zhao

Mark Shephard

Seegyong Seol

Usman Riaz

Sam Williams

Sherry Li

Nan Ding

Yang Liu

Hans Johansen