Deflation results with MCMC

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1 Constant preconditioners

1.1 Block Jacobi (bJ)

1.2 Algebraic multigrid (AMG)

1.3 Low rank (LORASC)

1.4 Neumann-Neumann (NN)

2 Deflation results

2.1 Weak scaling

Results in Tab. 1 are *.

Table 1: Weak scaling results of deflation for a constant bJ preconditioner with $spdim = \lfloor 2.5 \times nb \rfloor$.

n	nb	pcg iter	spdim	eigdefpcg iter	eipcg iter	defpcg iter
20,000	8	10 ± 2	20	10 ± 2	10 ± 2	10 ± 2
40,000	16	10 ± 2	40	10 ± 2	10 ± 2	10 ± 2
80,000	32	10 ± 2	80	10 ± 2	10 ± 2	10 ± 2
160,000	64	10 ± 2	160	10 ± 2	10 ± 2	10 ± 2
320,000	128	10 ± 2	320	10 ± 2	10 ± 2	10 ± 2

Table 2: Weak scaling results of deflation for a constant LORASC preconditioner with $\varepsilon = 0.01$ and $spdim = \lfloor 2.5 \times ndom \rfloor$.

n	ndom	pcg iter	spdim	eigdefpcg iter	eipcg iter	defpcg iter
20,000	8	10 ± 2	20	10 ± 2	10 ± 2	10 ± 2
40,000	16	10 ± 2	40	10 ± 2	10 ± 2	10 ± 2
80,000	32	10 ± 2	80	10 ± 2	10 ± 2	10 ± 2
160,000	64	10 ± 2	160	10 ± 2	10 ± 2	10 ± 2
320,000	128	10 ± 2	320	10 ± 2	10 ± 2	10 ± 2

Table 3: Weak scaling results of deflation for a constant LORASC preconditioner with $\varepsilon = 0$ and $spdim = \lfloor 2.5 \times ndom \rfloor$.

n	ndom	pcg iter	spdim	eigdefpcg iter	eipcg iter	defpcg iter
20,000	8	10 ± 2	20	10 ± 2	10 ± 2	10 ± 2
40,000	16	10 ± 2	40	10 ± 2	10 ± 2	10 ± 2
80,000	32	10 ± 2	80	10 ± 2	10 ± 2	10 ± 2
160,000	64	10 ± 2	160	10 ± 2	10 ± 2	10 ± 2
320,000	128	10 ± 2	320	10 ± 2	10 ± 2	10 ± 2

Table 4: Weak scaling results of deflation for a constant AMG preconditioner.

n	pcg iter	spdim	eigdefpcg iter	eipcg iter	defpcg iter
20,000	10 ± 2	20	10 ± 2	10 ± 2	10 ± 2
40,000	10 ± 2	40	10 ± 2	10 ± 2	10 ± 2
80,000	10 ± 2	80	10 ± 2	10 ± 2	10 ± 2
160,000	10 ± 2	160	10 ± 2	10 ± 2	10 ± 2
320,000	10 ± 2	320	10 ± 2	10 ± 2	10 ± 2

2.1.1 Condensed linear system

Table 5: Weak scaling results of deflation for a constant NN preconditioner with $spdim = \lfloor 2.5 \times ndom \rfloor$.

n_Γ	ndom	pcg iter	spdim	eigdefpcg iter	eipcg iter	defpcg iter
20,000	8	10 ± 2	20	10 ± 2	10 ± 2	10 ± 2
40,000	16	10 ± 2	40	10 ± 2	10 ± 2	10 ± 2
80,000	32	10 ± 2	80	10 ± 2	10 ± 2	10 ± 2
160,000	64	10 ± 2	160	10 ± 2	10 ± 2	10 ± 2
320,000	128	10 ± 2	320	10 ± 2	10 ± 2	10 ± 2

2.2 Strong scaling results

2.2.1 Condensed linear system

Table 6: Strong scaling results of deflation for a constant LORASC preconditioner with $\varepsilon = 0.01$ and $spdim = \lfloor 2.5 \times ndom \rfloor$.

n	ndom	pcg iter	spdim	eigdefpcg iter	eipcg iter	defpcg iter
20,000	8	10 ± 2	20	10 ± 2	10 ± 2	10 ± 2
40,000	16	10 ± 2	40	10 ± 2	10 ± 2	10 ± 2
80,000	32	10 ± 2	80	10 ± 2	10 ± 2	10 ± 2
160,000	64	10 ± 2	160	10 ± 2	10 ± 2	10 ± 2
320,000	128	10 ± 2	320	10 ± 2	10 ± 2	10 ± 2