— HPDDM —

https://github.com/hpddm/hpddm

All keywords must be prefixed by `-hpddm_`. If a value is specified in the column "Default", this value is used when the corresponding option is not set by the user. When no default value is specified but the corresponding option is set by the user, the option is true (represented internally by 1). If the option is not set, its value is false (represented internally by 0). Options highlighted in red should be reserved to expert users.

Keyword	Description	Possible values	Default
help	Display available options	Anything	
version	Display information about HPDDM	Anything	
tol	Relative decrease in residual norm to reach in order to stop iterative methods	Numeric	10^{-6}
max_it	Maximum number of iterations of iterative methods	Integer	100
verbosity	Level of output (higher means more displayed information)	Integer	
reuse_preconditioner	Do not factorize again the local matrices when solving subsequent systems	Boolean	
local_operators_not_spd	Assume local operators are general symmetric (instead of symmetric or Hermitian positive definite)	Boolean	
orthogonalization	Method used to orthogonalize a vector against a previously generated orthogonal basis	cgs, mgs	cgs
dump_local_matri(ces|x_[[:digit:]]+)	Save either one or all local matrices to disk	String	
krylov_method	Type of iterative method used to solve linear systems	gmres, bgmres, cg, gcrodr, bgcrodr	gmres
gmres_restart	Maximum number of Arnoldi vectors generated per cycle	Integer	50
variant	Left, right, or variable preconditioning	left, right, flexible	right
qr	Method used to perform distributed QR factorizations	cholqr, cgs, mgs	cholqr
initial_deflation_tol	Tolerance when deflating right-hand sides inside Block GMRES or Block GCRODR	Numeric	
recycle	Number of harmonic Ritz vectors to compute	Integer	
recycle_same_system	Assume the system is the same as the one for which Ritz vectors have been computed	Boolean	
recycle_strategy	Generalized eigenvalue problem to solve for recycling	A, B	A
recycle_target	Criterion to select harmonic Ritz vectors	SM, LM, SR, LR, SI, LI	SM
eigensolver_tol	Tolerance for computing eigenvectors by ARPACK or LAPACK	Numeric	10^{-6}
geneo_nu	Number of local eigenvectors to compute for adaptive methods	Integer	20
geneo_threshold	Threshold for selecting local eigenvectors for adaptive methods	Numeric	
master_p	Number of master processes	Integer	1
master_distribution	Distribution of coarse right-hand sides and solution vectors	centralized, sol, sol_and_rhs	centralized
master_topology	Distribution of the master processes	0, 1, 2	0
master_filename	Save the coarse operator to disk	String	
master_exclude	Exclude the master processes from the domain decomposition	Boolean	
master_not_spd	Assume the coarse operator is general symmetric (instead of symmetric positive definite)	Boolean	

When using Schwarz methods, there are additional options.

Keyword	Description	Possible values	Default
`schwarz_method`	Type of Schwarz preconditioner used to solve linear systems	`ras`, `oras`, `soras`, `asm`, `osm`, `none`	`ras`
`schwarz_coarse_correction`	Type of coarse correction used in two-level methods	`deflated`, `additive`, `balanced`	

When using substructuring methods, there is an additional option.

Keyword	Description	Possible values	Default
`substructuring_scaling`	Scaling used in the definition of the Schur complement preconditioner	`multiplicity`, `stiffness`, `coefficient`	`multiplicity`

When using MKL PARDISO as a subdomain solver (resp. coarse operator solver), there are additional options, cf. `https://software.intel.com/en-us/node/470298` (resp. `https://software.intel.com/en-us/node/590089`).

Keyword	Description	Possible values
`mkl_pardiso_iparm_(2|8|1[013]|2[147])`	Integer control parameters of MKL PARDISO for the subdomain solvers	Integer
`master_mkl_pardiso_iparm_(2|1[013]|2[17])`	Integer control parameters of MKL PARDISO for the coarse operator solver	Integer

When using MUMPS as a subdomain solver (resp. coarse operator solver), there are additional options, cf. `http://mumps.enseeiht.fr/index.php?page=doc`.

Keyword	Description	Possible values
`mumps_icntl_([6-9]|[1-3][0-9]|40)`	Integer control parameters of MUMPS for the subdomain solvers	Integer
`master_mumps_icntl_([6-9]|[1-3][0-9]|40)`	Integer control parameters of MUMPS for the coarse operator solver	Integer

When using *hypre* as a coarse operator solver, there are additional options, cf. `http://acts.nersc.gov/hypre/#Documentation`.

Keyword	Description	Possible values	Default
`master_hypre_solver`	Solver used by *hypre* to solve coarse linear systems	`fgmres`, `pcg`, `amg`	`fgmres`
`master_hypre_tol`	Relative convergence tolerance	Numeric	10^{-12}
`master_hypre_max_it`	Maximum number of iterations	Integer	500
`master_hypre_gmres_restart`	Maximum number of Arnoldi vectors generated per cycle when using FlexGMRES	Integer	100
`master_boomeramg_coarsen_type`	Parallel coarsening algorithm	Integer	6
`master_boomeramg_relax_type`	Smoother	Integer	3
`master_boomeramg_num_sweeps`	Number of sweeps	Integer	1
`master_boomeramg_max_levels`	Maximum number of multigrid levels	Integer	10
`master_boomeramg_interp_type`	Parallel interpolation operator	Integer	0