— HPDDM —

https://github.com/hpddm/hpddm

All keywords must be prefixed by `-hpddm_`. When no default value is specified in the last column for an option with literal values (e.g., `orthogonalization`), the value used is the first on the list of possible values (e.g., `cgs`) unless another value is set by the user. Options highlighted in red should be reserved for expert users.

Keyword	Description	Possible values	Default
`help`	Display available options	Anything	
`tol`	Relative decrease in residual norm to reach in order to stop iterative methods	Numeric	10^{-8}
`max_it`	Maximum number of iterations of iterative methods	Integer	100
`verbosity`	Number of messages printed to screen	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`	
`qr`	Method used to perform the distributed QR factorizations	`cholqr`, `cgs`, `mgs`	
`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`	
`gmres_restart`	Maximum number of Arnoldi vectors generated per cycle	Integer	50
`variant`	Select the preconditioning side	`left`, `right`, `flexible`	
`initial_deflation_tol`	Tolerance for deflating right-hand sides inside Block GMRES	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	
`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`	
`master_topology`	Distribution of the master processes	`0`, `1`, `2`	
`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
`schwarz_method`	Type of Schwarz preconditioner used to solve linear systems	`ras`, `oras`, `soras`, `asm`, `osm`, `none`
`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
`substructuring_scaling`	Type of scaling used in the definition of the Schur complement preconditioner	`multiplicity`, `stiffness`, `coefficient`

When using MKL PARDISO has 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 has 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* has 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`	
`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