Default COCO Toolbox Settings

List of COCO toolbox settings, their descriptions, and their default values

Continuation Toolbox 'cont' – atlas_1d_settings

These options can be set with:

```
prob = coco_set(prob, 'cont', [SETTING], [VALUE])
```

Setting	Description	Value Type	Default Value
PtMX	Maximum number of steps in either direction along the solution manifold. Can also be set with [PtMX1, PtMX2]	integer	100
NAdapt	Adaption period for mesh grid?	integer	0 (off)
h0	Initial step size	float	0.1
h_max	Maximum step size	float	0.5
h_min	Minimum step size	float	0.01
FP	Detect fold points	logical	true
fpar	Active continuation parameter for fold detection	string	''
BP	Detect branch points	logical	true
RMMX	Max number of remesh sweeps	integer	10
h_fac_max	Maximum step size adaption factor	float	2.0
h_fac_min	Minimum step size adaption factor	float	0.5
MaxRES	Max residual norm in prediction	float	0.1
al_max	Max angle between consecutive tangents	float	7.0
ga	Adaption security factor	float	0.95
bi_drect	Go in both directions or not	logical	true
interp	cseg interpolation	string	'cubic'
Valpha	Tolerance for "vertical" tangent	float	800
NullItMX	Max number of nullspace corrections	integer	0
norm	Norm for step size	float	2.0

ODE Toolbox 'ode' – ode_settings

These options can be set with:

```
prob = coco_set(prob, 'ode', [SETTING], [VALUE])
```

Setting	Description	Value Type	Default Value
`vectorized`	Enable/disable vectorised evaluation	logical	`true`
`autonomous`	Indicate whether ODE is autonomous or not	logical	`true`
`hfac1`	First-order finite-difference step size	float	`1e-08`
`hfac2`	Second-order finite-difference step size	float	`1e-04`

Periodic Orbit Toolbox 'po' – po_settings

These options can be set with:

```
prob = coco_set(prob, 'po', [SETTING], [VALUE])
```

Setting	Description	Value Type	Default Value
`bifus`	Enable/disable detection of bifurcations	logical	`true`
`USTAB`	Monitor number of unstable eigenvalues	logical	`true`
`SN`	Detect saddle-node bifucations	logical	`true`
`PD`	Detect period-doubling bifucations	logical	`true`
`TR`	Detect torus bifurcations	logical	`true`
`NSA`	Detect neutral saddle points	logical	`false`

Equilibrium Point Toolbox 'ep' – ep_settings

These options can be set with:

```
prob = coco_set(prob, 'ep', [SETTING], [VALUE])
```

Setting	Description	Value Type	Default Value
bifus	Enable/disable detection of bifurcations	logical	TRUE
USTAB	Monitor number of unstable eigenvalues	logical	TRUE
SN	Detect saddle-node bifucations	logical	TRUE
HB	Detect Hopf bifurcations	logical	TRUE
NSA	Detect neutral saddle points	logical	FALSE
BTP	Detect Bogdanov-Takens points	logical	TRUE

Trajectory Collocation Toolbox 'coll' – coll_settings

These options can be set with:

```
prob = coco_set(prob, 'coll', [SETTING], [VALUE])
```

Setting	Description	Value Type	Default Value
var	Enable/disable temporay storage of solution to variation proble	logical	false
NTST	Number of mesh intervals	integer	10
NCOL	Number of collocation nodes	integer	4
SAD	Equidistribution wieght for error estimator	float	0.95
method	Choice of Banach iteration boundary condition	string	'3I'
NBeta	Number of homotopy steps for initialisation of fundamental solution	integer	5
NBItMX	Maximum number of Banach iterations for fundamental solution	integer	10
TOL	Discretisation error tolerance	float	1e-04
MXCL	Enable/disable termination when discretisation error exceeds tolerance	logical	tru
TOLINC	Upper bound on discretisation error in window of adaption	float	2e-05
TOLDEC	Lower bound on discretisation error in window of adaption	float	5e-06
NTSTMN	Minumum number of discretisation intervals	integer	5
NTSTMX	Maximum number of distretisation intervals	integer	100