Soildynamics Tutorials

Parallel 2D with 4 MPI processes

Single Dirichlet condition

```
PSD_PreProcess -dimension 2 -problem soildynamics -dirichletconditions 1 \
-timediscretization newmark-beta
```

```
PSD_Solve -np 4 Main.edp -mesh ./../Meshes/2D/soil.msh -v 0
```

Parallel 3D with 3 MPI processes

Single Dirichlet condition and Newmark-beta time discretization

```
PSD_PreProcess -dimension 3 -problem soildynamics -dirichletconditions 1 \
-timediscretization newmark-beta
```

```
PSD_Solve -np 3 Main.edp -mesh ./../Meshes/3D/soil.msh -v 0
```

Parallel 2D with double couple with 2 MPI processes

Single Dirichlet via double couple and using GFP. Double couple is displacement based.

```
PSD_PreProcess -dimension 2 -problem soildynamics -model linear \
-timediscretization newmark-beta -useGFP -doublecouple displacement-based
```

```
PSD_Solve -np 2 Main.edp -v 1 -ns -nw -mesh ./../Meshes/2D/soil-dc.msh
```

try replacing `-doublecouple displacement-based` *with* `-doublecouple force-based` *for double couple constructed by force based method*

Parallel 3D with double couple with 4 MPI processes

Single Dirichlet via double couple and using GFP. Double couple is displacement based.

```
PSD_PreProcess -dimension 3 -problem soildynamics -model linear \
-timediscretization newmark-beta -useGFP -doublecouple displacement-based
```

```
PSD_Solve -np 4 Main.edp -v 1 -ns -nw -mesh ./../Meshes/2D/soil-dc.msh
```

try replacing `-doublecouple displacement-based` *with* `-doublecouple force-based` *for double couple constructed by force based method*

Parallel 3D with top-ii-vol meshing with 4 MPI processes

Single Dirichlet at the bottom and using GFP.

```
PSD_PreProcess -dimension 3 -problem soildynamics -model linear \
-timediscretization newmark-beta -useGFP -top2vol-meshing
```

```
PSD_Solve -np 4 Main.edp -v 0 -ns -nw
```

Parallel 3D with top-ii-vol meshing with 3 MPI processes

Single Dirichlet via double couple and using GFP. Double couple is displacement based.

```
PSD_PreProcess -dimension 3 -problem soildynamics -model linear \
-timediscretization newmark-beta -useGFP -top2vol-meshing -doublecouple
displacement-based
```

```
PSD_Solve -np 3 Main.edp -v 0 -ns -nw
```

try replacing `-doublecouple displacement-based` *with* `-doublecouple force-based` *for double couple constructed by force based method*

- *Optionally try using* `-fastmethod` *flag with* `PSD_PreProcess` *optimized solver*
- *Optionally try using* `-timediscretization generalized-alpha` *instead of* `-timediscretization newmark-beta` *to change time discretization scheme*
- *Add* `-sequential` *flag to* `PSD_PreProcess` *for sequential solver, but remember to use* `PSD_Solve_Seq` *instead of* `PSD_Solve`