Elastodynamics Tutorials - Diffrent time discretizations for elastodynamic simulations

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Abstract

This document details some tutorials of elastodynamics module of PSD. These tutorials are not verbose, but does instead give a kick start to users/developers for using PSD's elastodynamics module.

PSD offers different time discretization techniques for solving time dependent problems. For this example instead of using Newmark-β time discretization let us switch to more advanced Generalized-α one. This can be done by -timediscretization generalized_alpha, so for example for a 2D problem we use:

```
PSD_PreProcess -dimension 2 -problem elastodynamics -dirichletconditions 1 -tractionconditions 1 \
-timediscretization generalized_alpha -postprocess uav
```

Once the step above has been performed, we solve the problem using three MPI processes, with the given mesh file bar-dynamic.msh.

```
PSD_Solve -np 3 Main.edp -mesh ./../Meshes/2D/bar-dynamic.msh -v 0
```

Similarly try out the 3D problem as well.