Elastodynamics Tutorials - Parallel 3D elastodynimic simulations with PSD

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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.

The problem of interest is a single Dirichlet condition (clamped end bar) and traction loading. For this example we use Newmark-β time discretization. Additionally postrocessing is demanded for displacement, acceleration, and velocity (u, a, v).

```
PSD_PreProcess -dimension 3 -problem elastodynamics -dirichletconditions 1 -tractionconditions 1 \
-timediscretization newmark_beta
```

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

```
PSD_Solve -np 4 Main.edp -mesh ./../Meshes/3D/bar-dynamic.msh -v 0
```