Soildynamics Tutorials for PSD - Soildynamics in 2D with PSD

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Abstract

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

The problem of interest is a single Dirichlet condition problem of soildynamics in 2D. For this problem we use Newmark-β time discretization. Additionally postrocessing is demanded for displacement, acceleration, and velocity (u, a, v).

```
PSD_PreProcess -dimension 2 -problem soildynamics -dirichletconditions 1 -timediscretization newmark_beta \
-postprocess uav
```

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

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

Using ParaView for postprocessing the results that are provided in the VTUs... folder, results such as those shown in figure~1 can be extracted.

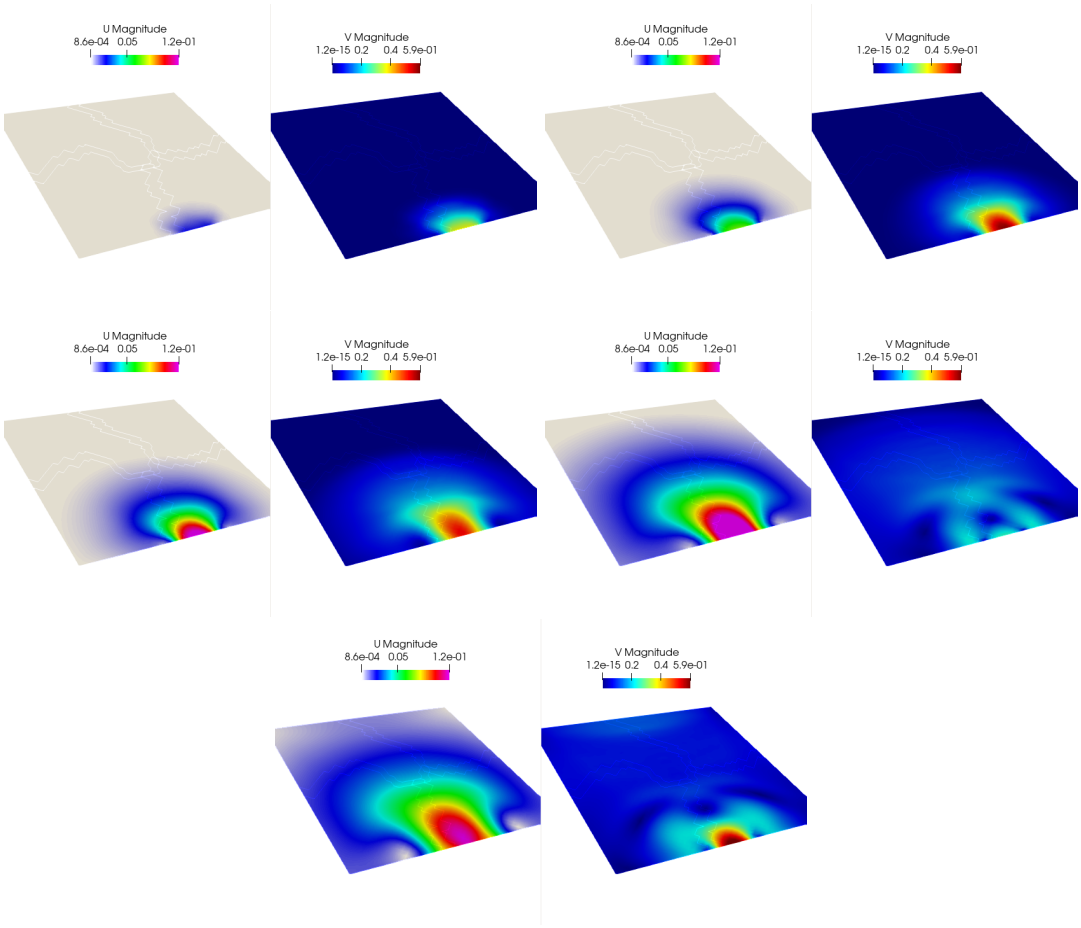

Figure 1: Finite element displacement and velocity fields visualized for the 2D problem with ParaView at different timesteps.