Strike-slip (no gravity)

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January 28, 2008

Benchmark Description

Benchmark problem description. Formerly known as benchmark 4b.

Summary

Viscoelastic (Maxwell) relaxation of stresses from a single, finite, strike-slip earthquake in 3-D without gravity. Evaluate results with imposed displacement boundary conditions on a cube with sides of length 24 km. The displacements imposed are the analytic elastic solutions. Anti-plane strain boundary conditions are imposed at y = 0, so the solution is equivalent to that for a domain with a 48 km length in the y direction.

Problem Specification

PROBLEM GEOMETRY

- Model size:
    - 0 km ? x ? 24 km
    - 0 km ? y ? 24 km
    - -24 ? z ? 0 km
        - Top layer: -12 km ? z ? 0 km

        - Bottom layer: -24 km ? z ? -12 km

ttom layer is viscoelastic.

n ? z ? 0 km Slip distribution: 1 m of uniform strike slip motion for 0 km ? y ? 12 km and -12 km ? z ? 0

linear taper to 0 slip at y = 16 km and z = -16 km. In the region where the two tapers overlap, each slip

model is a free surface. There are two exceptions to these applied boundary conditions. The first is on
-displacements are set to zero. The second is along the line segment between (12, 0, -24) and (12, 24,
isplacement components are left free.

50 m. If possible, also run the models with a nominal spatial resolution of 125 m. Optionally, use meshes
solution meshes.

(i.e., element connectivity arrays and coordinates of vertices) and basis functions.

derived via mesh refinement. Analytical solutions to the viscoelastic solution are being sought if

minal node spacing.

le spacing.

ng.

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ssume a bilinear slip distribution in the region where the fault tapers overlap, and now assumes a taper

ed along the intersection of the fault plane (or its projection) along y=0 and z=-24.

pteron. An iterative solver was used, which uses the Incomplete LU preconditioner with a drop

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