

Code Name: FDMSPLIT1.4

Language : Fortran

Type of Code: 3D Staggered Grid Finite Difference Method

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Articles Describing the Technique:

1. Pitarka, A. (1999), 3D elastic finite-difference modeling of seismic motion using staggered grid with non-uniform spacing, Bull. Seis. Soc. Am., 89, 54 – 68.
2. Dalguer, L, and S.M. Day. (2007). Staggered –grid split-node method for spontaneous rupture simulation, JGR, 112,B02302.

Availability: Code available upon request. Requests should be made to Arben Pitarka

Funding Source: URS Corp. internal funding, Southern California Earthquake Center.

Element Shapes: Cube

Accuracy: 4-th order accuracy, except for the free surface and fault plane where the accuracy is of 2-nd order.

Implementation of the Fault Boundary Conditions: Split Nodes.

Time-Stepping Method: Explicit

Damping Method: Artificial Viscous Damping (Dalguer and Day, 2007)

Implementation of Fault Behavior: Linear Slip Weakening Friction Law

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Parameter Settings: Artificial Damping = 0.3

Mesh: Regular mesh with constant grid spacing of 100m

Boundary Conditions: Clayton and Enquist (1977) absorbing boundary conditions.

Time Step: Constant time step calculated based on the stability condition of the finite-difference scheme.