Parallel computation of large scale 3D seismic wavefield using a displacement-stress staggered-grid FDM with nonuniform spacing

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To simulate large scale 3D seismic wavefield, huge computer memory and computation time are necessary. We have developed a 3D code, which can be run using workstations, for modeling seismic wave propagation . This is based on a displacement-stress formulation of the elastodynamic equation, which is discretized by a staggered-grid with nonuniform spacing and a scheme second-order accurate in time and second- or fourth-order accurate in space. We have also developed a version of this code for a parallel computation.