Numerical Simulation of Seismic Wave Propagation in Non-Structural Grid System

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This presentation presents a numerical simulation of seismic wave propagation in highly complex, heterogeneous structures of high resolution. The equations of motion for the 3D wave field are solved using a finite element method, which tetrahedral element is applied for spatial discretization. It can be very easily applied to highly complex geometry, even to that involving spherical geometry, which usually has the grid convergence problems associated with poles and a center. This simplicity associated with spatial discretization enables us to include the heterogeneity of small scale and large scale, very easily, without using the sophisticated scheme like multi-grid approach. The present scheme is well suited for the simulation of broadband physical processes. The results of benchmark analysis will be shown, which they are compared with those of analytic approach.