Formulation of computation of highly accurate synthetic seismograms for a point source between numerical grids

Nozomu Takeuchi[1], Robert J. Geller[2]

[1] ERI, Univ. of Tokyo, [2] Earth and Planetary Science, Tokyo Univ

Introducing a point source in computation of synthetic seismograms is imposing the discontinuous boundary conditions for displacment and traction there. It is straightforward to impose such discontinuous condition for a point source on a numerical grid, however, if a point source is not on a numerical grid, some tricks are required to impose such discontinuous conditions accurately. We previously derived a weak form (i.e. Direct Solution Method) solution for an arbitrary point force by applying the source representation of Geller & Hatori (1995, GJI). In this study, we extend this method to other discretization methods such as the time domain finite difference method and psuedo-spectrum method.