

Derivation of optimally accurate schemes for computing synthetic seismograms for media with inter-node lithological boundaries

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Our group previously derived optimally accurate operators for computing synthetic seismograms for media with lithological discontinuities which coincide with a computational grid using the general theory of Geller and Takeuchi (1995). However, lithological discontinuities do not in general coincide with computational grid. Thus highly accurate synthetic seismograms cannot be obtained for such media using our previously derived operators. In this study, we generalize our previous results. Using the new operators derived in this study, we can compute optimally accurate synthetic seismograms for realistic earth models which have arbitrarily located lithological boundaries (e.g. subduction zones, seafloor topography, surface topography, etc).