Synthetic seismograms in layered media with scatterers: Theory and tests

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We presented the formulation of 2-D SH wavefield in layered media with scatterers (cavities in this study), based on the boundary integral method, combining the point or line source representation of scattered waves with the plane-wave decomposition of layered structure. Using some

model calculations, our obtained wavefield has satisfactory accuracy without increasing the

amount of computing time much, except for the case that scatterers are located close to the surface. The important factor of our computations is not how many scatterers are or how complex the layered structure is, but how wide the range of take-off angels (i.e., wavenumbers) is. The obtained seismograms show the interaction between scatterers and horizontal layers, in addition to multiply scattered waves.