

# DSM calculation of synthetic seismograms for TI spherically symmetric media with local lateral heterogeneity and their application

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We have previously developed algorithms and software to use the Direct Solution Method to compute 'almost exact' complete synthetic seismograms (including both body and surface waves) for transversely isotropic spherically symmetric media. In this study we extend our methods to include the approximation effect of a local lateral heterogeneous perturbation in our calculations. These methods can be applied to the determination of laterally heterogeneous transversely isotropic structure in regions such as the base of the lower mantle (the D" layer). Such information on anisotropic structure can contribute to our understanding of geodynamics and rheology.