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Visco-Acoustic Full Wave Inversion in the Frequency Domain with Mixed Grids

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Abstract : Full Wave Inversion (FWI) is a variant of seismic tomography for obtaining velocity profiles by an optimization process that combine forward modelling (or solution of wave equation) with the misfit between synthetic and observed data. In this research we are modelling wave propagation in a visco-acoustic medium in the frequency domain. We apply finite differences for the numerical solution of the wave equation with a mix between usual and rotated grids, where density depends on velocity and there exists a damping function associated to a linear dissipative medium. The velocity profiles are obtained from an initial one and the data have been modeled for a frequency range 0-120 Hz. By an iterative procedure we obtain an estimated velocity profile in which are detailed the remarkable features of the velocity profile from which synthetic data were generated showing promising results for our method.

Keywords : seismic inversion, full wave inversion, visco acoustic wave equation, finite diffrence methods
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