

One-Dimensional Prestack Seismic Inversion with Very Fast Simulated Annealing using Edge-Preserving-Smoothing Filter

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Abstract/Excerpt

A hybrid technique based on very fast simulated annealing (VFSA) to estimate the subsurface layer elastic parameters such as the P-wave velocity, the S-wave velocity and the bulk density is presented here. The technique introduces an edge-preserving-smoothing (EPS) filter to the VFSA algorithm in order to precondition the model space for blocky solutions. The algorithm leads to faster convergence and improved estimation compared to classical VFSA without the application of the EPS filters. Tests of the algorithm with different noise level and different random number generating seeds prove the stability and consistency of the algorithm.