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Seismic velocity estimation from wide-angle reflections in sediments

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Travel time inversion of wide-angle seismic data is well-known technique used in various scales. In specific case of the industrial profiling of a sedimentary layers, where rather flat structures with relatively small velocity differences are observed, we propose an extension of standard reflection tomography to wide-angle observations. In such conditions wide-angle reflections, and especially one observed at large angles, are dominant. They could be easily interpreted, and combined with observed refractions, gives precise estimation of velocities. Such an interpretation is presented based on full spread geometry seismic recording of standard vibroseis sources performing regular reflection seismic works. In the result it was possible to precisely recognize the velocity structure in layered media, and also perform its uncertainty analysis.