KIRCHHOFF DEPTH MIGRATION IN AN ANISOTROPIC MODEL WITH A CURVED INTERFACE

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Kirchhoff prestack depth migration is applied to calculation of migrated sections in several 2-D generally anisotropic velocity models.

The dimensions of the velocity models and measurement configuration were derived from the Marmousi model and dataset (Versteeg and Grau, 1991). Each velocity model is composed of two homogeneous layers separated by one curved interface. The upper layer is generally anisotropic. The bottom layer is isotropic.

Computation of the recorded wave field in the models was performed using the ANRAY software package (Gajewski and Pšenčík, 1990). Two-point rays were calculated for reflected P-wave. Ray-theory seismograms were computed for 240 shots. The first shot was at 3 km, the last shot was at 8.975 km, distance between shots was 0.025 km. Number of traces per shot was 96, distance between traces was 0.025 km.

We used MODEL, CRT and FORMS subroutine packages for the Kirchhoff prestack depth migration (Červený, Klimeš and Pšenčík, 1988, Bulant, 1996). Figure 1 shows stacked migrated section for the model with generally anisotropic upper layer. The computing time of the Kirchhoff migration, for stacked section computed on a grid of cells 16×16 metres and interpolated to grid of cells 4×4 metres, is approximately 2 hours. The time of the computation corresponds to an Athlon one core 2.3 GHz processor.

Stacked migrated sections for several 2-D generally anisotropic velocity models will be presented in a poster.

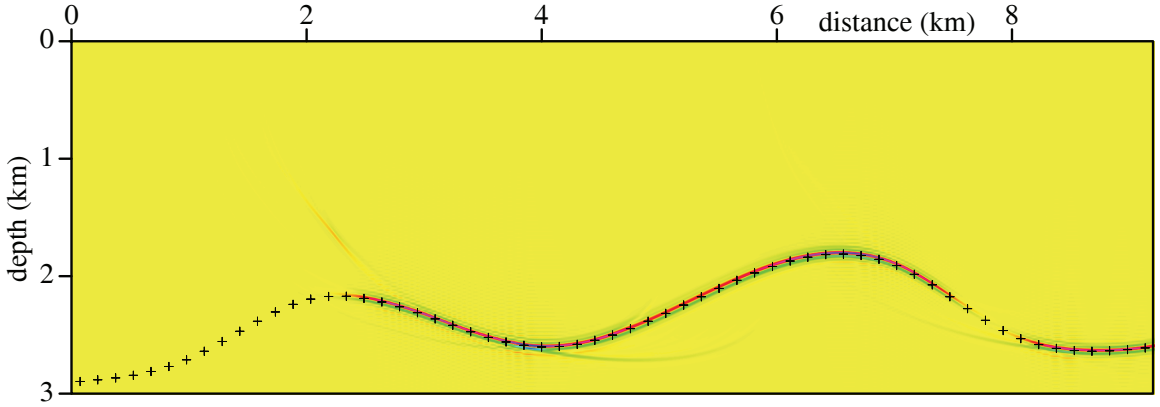

Figure 1. Stacked migrated section calculated in one of several 2-D generally anisotropic velocity models. The anisotropy of the velocity model for migration is the same as in the upper layer of the velocity model used for computation of the recorded wave field. The crosses denote the interface in the velocity model used for computation of the recorded wave field.

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