

High density simultaneous picking of moveout parameters velocity and anellipticity

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The focusing process for time imaging is improved drastically when high-density parameter fields are used. Large offsets, steep dips and finally the anisotropy of the data require the estimation of two parameters: velocity (V) and anellipticity (h). Picking V and h using two-pass techniques cannot be a long-term solution. The estimation of both parameters is very sensitive to the mute function separating near to far offsets. Picking both parameters simultaneously using dense bi-spectral picking analysis overcomes this situation.

CGG are proposing an original parameterization of the non-hyperbolic moveout, which increases the sensitivity of the analysis and allows static moveout corrections, necessary for automatic dense pickings.

An intelligent QC sorting of the raw V and h fields, based on lateral coherency of the semblance and the Dix inversion ability of local V and h functions, prepares skeleton fields for simultaneous geostatistical filtering of both parameters. The filling of both V and h fields is done simultaneously using 3D ordinary kriging on the uncorrelated parameters. In order to preserve the moveout resolution, the uncorrelated parameters are filtered using 3D factorial kriging. Different kinds of noise patterns are removed.

The back projection of the uncorrelated filtered fields to V and h allows the required simultaneous filtering.