任意空间取向TI介质中P波四次时差系数特征

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摘要　同类反射波（非转换波）走时偏离双曲，称为非双曲或四次时差，在长排列各向异性地震资料处理中需要校正．本文基于我们导出的水平界面任意空间取向TI (ATI)介质中同类反射波四次时差系数(A_4)的精确解析解，数值计算研究P波四次时差系数特征．正演结果表明，ATI条件下A_4系数随CMP测线方位变化的特征不仅与TI介质的各向异性参数有关，而且与TI对称轴的空间取向密切相关；TI介质的各向异性参数和TI对称轴的倾角决定了A_4变化特征，而且TI对称轴的方位决定了A_4随测线方位变化的对称性．此研究结果将对各向异性解释及参数反演有参考意义．

关键词　 TI介质　 任意空间取向　 P波反射　 四次时差系数(A_4)变化特征

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The characteristic of quartic moveout coefficient of P-wave in the TI homogeneous media with an arbitrary orientation symmetric-axis

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Abstract Deviations of any pure mode (non-converted) wave reflection traveltimes from a hyperbola, called the nonhyperbolic or quartic moveout, need to be handled properly while processing long-spread anisotropic seismic data. Based on our exact analytic expression for the quartic moveout coefficient (A_4) of pure mode (non-converted) wave reflection for a horizontal interface in the TI media with an arbitrary spatial orientation of symmetry axis (ATI), we numerically study the characteristic of the P-wave A_4 with the CMP survey line azimuth variation. The modeling results show that the characteristic of the A_4 is not only relative to the anisotropy parameters of the TI, but also to the spatial orientation of the TI. The variation characteristic of the A_4 is determined by the anisotropy parameters and tilt angle of the TI symmetry-axis, and the azimuth of the TI symmetry-axis results in the azimuth symmetry of the A_4 with the survey line variation. Our numerical results will benefit the explanation of the anisotropic seismic data and the parameters inversion.

Key words　 TI media; Arbitrary spatial orientation; P-wave reflection; Quartic moveout coefficient; Variation characteristic

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