

论文

单相介质AVO反演的精度分析

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摘要 振幅随偏移距变化(AVO)反演是一个非线性的组合最优化过程,理论上可先将该非线性问题线性化,然后求解线性问题;或者直接利用非线性的模拟退火、遗传算法等方法求解.但无论哪种反演思路,实际中影响其精度的因素很多,因此分析AVO反演中的误差来源对提高反演精度和评价反演方法的可靠性非常重要.本文对能造成反演误差的主要因素,噪音、薄层调谐、地震数据处理中的误差、入射角范围等进行了分析,讨论了这些因素可能对反演结果造成的影响,发现在AVO反演过程中可以从优化参数选择和针对性处理方面来减小这些误差,提高反演精度.

关键词 [振幅随偏移距变化](#) [组合最优化](#) [模拟退火](#) [遗传算法](#) [薄层调谐](#)

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The Precision analyses of AVO inversion in one-phase medium

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Abstract AVO (Amplitude Variation with Offset) inversion is a nonlinear optimization algorithm to find global optimum of an objective function. Therefore, the processing can be performed by one of the two solutions in theory: converting the nonlinear problem to a linear one, or solving the nonlinear problem directly using simulating annealing (SA) method, genetic algorithm (GA), etc. But in fact, there are a lot of factors affecting the inversion precision in the processing of real data. Noise, tune of thin layers, errors in seismic data processing and range of angle of incidence are main aspects causing errors in AVO inversion and mainly discussed in this paper. After analyze the way how these factors bring errors in AVO inversion, we find that properly choosing some parameters and doing some special processing in the inversion can degrade the influence of errors from these factors and improve the inversion precision.

Key words [amplitude variation with Offset](#); [optimization algorithm](#); [simulating annealing](#); [genetic algorithm](#); [tune of thin layers](#)

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