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多分辨迭后地震记录频率振幅补偿方法

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摘要: 考虑到大地对不同频率的地震波具有不同的衰减度与吸收, 利用小波多分辨率思想, 提出了一种改进常规的单一补偿的新方法——多分辨率补偿方法. 利用最大方差模原理, 使修正后的地震信号多分辨的方差模达到最大, 同时对其补偿后的地震记录振幅谱予以修正, 从而提高了迭后地震记录分辨率, 使强屏蔽下的弱反射层和薄层的分辨能力得到加强, 克服了采用单一补偿法时没有考虑不同频率具有不同吸收衰减度的缺点. 在新疆塔里木油田等地的应用结果表明: 资料经处理后分辨率可提高20 Hz左右, 强屏蔽下的弱反射层和薄层的信息得到了较好的恢复, 这对复杂结构的地震数据处理提供了1种切实可行的方法.

关键字: 频率振幅补偿; 粘弹性介质; 多分辨率; 小波分析

Treatment of stacked seismic data with multiresolution frequency-amplitude compensation

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Abstract: An ideal multiresolution frequency-amplitude compensation which is an improved old frequency-amplitude compensation method, and based on the fact that the absorbed or decayed waves energy varies with waves frequency is introduced in this paper. According to the method, the maximum variance norm was applied to adjust the variance norm to maximum, by revising the spectral weighting with multiresolution analysis, and thus improved the resolution of seismic data, and enhanced the weak-reflect and thin-bed resolution ability. The results of the application of this method interim Oil Field of Xinjiang are given. The results show that the resolution of the data is improved near 20 Hz, and the weak-reflect and thin-bed layers are restored better than the old. It is useful in analysing the complex structure.

Key words: frequency-amplitude compensation; viscoelastic medium; multiresolution; wavelet analysis

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