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论文

叠前地震数据的平面波深度偏移法

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摘要 提出了一套基于平面波分解的波动方程叠前地震数据深度偏移方法. 通过对共炮点道集和共偏移距道集地震数据的平面波分解，分别得到适用于单平方根波场外推方程和双平方根波场外推方程的共ps（炮点坐标平面波参数）平面波道集和共ph（偏移距坐标平面波参数）平面波道集. 在对共炮点道集和共偏移距道集地震数据的平面波分解时，不需要进行通常意义下的τ p变换计算. 通过对共ps平面波道集和共ph平面波道集的偏移效果对比，我们认为在速度弱横向变化介质中，两种平面波道集偏移方法的效果相当，但对于速度强横向变化介质，共ps平面波道集偏移方法的效果要优于共ph平面波道集偏移方法. 在计算效率方面，共ps平面波道集偏移方法与共ph平面波道集偏移方法基本相同.

关键词 叠前地震数据 偏移 共炮道集 共偏移距道集 平面波分解

分类号

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A METHOD OF PLANE WAVE DEPTH MIGRATION FOR PRE STACK SEISMIC DATA

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Abstract Based on plane wave decomposition, We propose a wave equation depth migration method for pre stack seismic data. Through the decompositions to common shot gathers and common offset gathers, one can obtain common ps plane wave gathers and common ph plane wave gathers which are suitable to the single square root extrapolation equation and the double square root extrapolation equation, respectively. During the decompositions to common shot gathers and common offset gathers, one doesn't need the calculation of τ p transformation in common sense. By the comparison of the migration results from the common ps plane wave gathers and common ph plane wave gathers, we think that, for the media with weak variation of velocity in lateral direction, the migration results are the same. However, for the media with strong variation of velocity in lateral direction, the migration result from the migration method for the common ps plane wave gathers is superior to that from the migration method for the common ph plane wave gathers. As for calculation efficiency, the migration method of common ps plane wave gathers is basically the same as that of common ph plane wave gathers.

Key words Pre stack seismic data;Migration;Common shot gather;Common offset gather;Plane wave decomposition.

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