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层状介质模型的散射波场

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摘 要：运用逆散射序列方法能去除自由表面和内部多次波.通过研究正散射序列的性质,讨论了散射序列与一次波和多次波的关系,指出了用散射理论描述多次波和一次波的步骤和方法;此外,讨论了Born近似与逆散射序列成像之间的差异.研究结果表明:Born近似成像法仅对于小扰动量适用,对于大扰动量,Born近似值会产生较大的误差,而运用逆散射序列成像可以得到模型参数的精确值.

关键字：散射序列;逆散射;一次波;多次波; Born近似

The relationship between scattering series fields

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Abstract: Scattering theory plays an important role in the seismic data processing and other fields. Recently, the method of inverse scattering series has already been used to remove free-surface multiples and to attenuate internal multiples,which is significant to seismic data processing. The paper deduced the theoretic model of scattering series in detail. And the authors discussed the relationship between scattering and multiples by studying the properties of forward scattering series and pointed out the relationship between scattering and primaries, multiples. All these are used to the inverse scattering method. At the same time, the paper discussed the difference between inverse scattering series imaging and Born approximation imaging. The results show that born approximation imaging is only useful to small perturbation, and to great perturbation it will cause great error, but inverse scattering series imaging can obtain the accurate model parameters.

Key words:scattering series; inverse scattering; primaries; multiples; Born approximation

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