

عنوان مقاله:

A New Regularization Method for Reverse Time Migration

محل انتشار:

یازدهمین کنفرانس بین المللی آکوستیک و ارتعاشات (سال: 1400)

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خلاصه مقاله:

A common challenge in wave-based exploration methods, like seismic exploration, is to obtain the precise image of the object under study in a timely fashion, using the data recorded by receivers. Reverse time migration (RTM), as a state-of-the-art imaging technique, provides outstanding imaging capabilities due to solving the full wave equation, instead of an approximation. Least-squares RTM (LSRTM) improves this method by using an iterative engine that minimizes a data misfit term. However, the quality of the image decreases when we deviate from ideal conditions, by for example, using an erroneous velocity model or in and inadequate physics. An appropriate regularization term (e.g., total variation (TV) regularization) is thus required to mitigate these shortcomings and stabilize the LSRTM solution. In this abstract, we first show that the conventional regularization methods are suboptimal for RTM imaging and then we propose a new alternative that improves the image quality dramatically. We demonstrate the performance of the proposed method with a set of numerical examples.

کلمات کلیدی:

.Reverse Time Migration; Least-squares Inversion; Regularization; Reflectivity Model, Geomechanical Properties

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