AN OVERVIEW OF PRE-STACK MIGRATION METHODS (B-34)

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In the practice of seismic data processing, CMP-stacking and post-stack migration are still frequently used techniques. These techniques, which were originally designed in the sixties, are computationally manageable with minicomputers. The underlying assumptions, however, are very restrictive and therefore in the past few years much research has been started for the development of pre-stack migration techniques. Even three-dimensional pre-stack migration lies within the scope of the current generation of vector computers. In this paper we will first briefly review the three main approaches to migration, according to the following classification:

- conventional CMP stacking, followed by post-stack migration (single dip, simple velocity media),
- partial pre-stack migration, followed by stacking and post-stack migration (multi-dip, simple velocity media),
- full pre-stack migration by Single Shot Record Inversion (multi-dip, arbitrary velocity media).

The partial pre-stack migration approach represents an attractive compromise of accuracy and efficiency, particularly for the three-dimensional case. In this paper, ample attention will be paid to the various techniques of partial pre-stack migration, according to the following classification:

- offset continuation,
- dip moveout,
- CMP-oriented tau-p techniques.

These techniques will be compared and the merits and shortcomings of the different approaches will be discussed.

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