

About the book

Over the few decades, researches have extensively studied the application of the singular spectrum-based time frequency domain eigen image methods, singular spectrum analysis and multichannel SSA for various geophysical data. This book addresses seismic reflection signals which represent the amalgamated signals of several unwanted signals/noises, such as ground roll, diffractions etc. Decompositions of such non-stationary and erratic field data is one of the multifaceted tasks in seismic data processing. The book discusses the latest advances in singular spectrum based algorithms for seismic data processing, providing an update on recent developments. It also includes comprehensive methodological and parametric descriptions, testing on appropriately generated synthetic data as well as comparisons between time and frequency domain algorithms and their application to the field data on 1D, 3D, and 4D data sets. Lastly, it features an exclusive chapter with MATLAB coding for SSA.

Contents:

- 1. Introduction to denoising and data Gap filling of seismic reflection data*
- 2. Time and frequency domain eigen image and Casow noise filtering of 2D seismic data*
- 3. Time domain frequency filtering of high resolution seismic reflection data using singular spectral analysis*
- 4. Frequency and time domain SSA for 2D seismic data denoising*
- 5. Filtering 2D seismic data using the time slice singular spectral analysis*
- 6. Robust and fast algorithms for singular spectral analysis of seismic data*
- 7. Denoising the 3D seismic data using multichannel singular spectrum analysis*
- 8. Seismic data Gap filling using the singular spectrum based analysis*
- 9. Singular spectrum vs. wavelet based denoising schemes in generalized inversion based seismic wavelet estimation*
- 10. Singular spectrum based filtering to enhance the resolution of seismic attributes*
- 11. Singular spectrum analysis with MATLAB*