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Minimization of the misfit functional; 3.1.3 The Data Resolution Matrix; 3.2 Solution of the Purely Underdetermined Problem; 3.2.1 Underdetermined System of Linear Equations; 3.2.2 The Model Resolution Matrix; 3.3 Weighted Least-Squares Method; 3.4 Applying the Principles of Probability Theory to a Linear Inverse Problem; 3.4.1 Some Formulae and Notations from Probability Theory; 3.4.2 Maximum Likelihood Method; 3.4.3 Chi-Square Fitting; 3.5 Regularization Methods; 3.5.1 The Tikhonov Regularization Method  
3.5.2 Application of SLDM Method in Regularized Linear Inverse Problem Solution  
3.5.3 Integrated Sensitivity; 3.5.4 Definition of the Weighting Matrices for the Model Parameters and Data; 3.5.5 Controlled Sensitivity; 3.5.6 Approximate Regularized Solution of the Linear Inverse Problem; 3.5.7 The Levenberg-Marquardt Method; 3.5.8 The Maximum a Posteriori Estimation Method (the Bayes Estimation); 3.6 The Backus-Gilbert Method; 3.6.1 The Data Resolution Function; 3.6.2 The Spread Function; 3.6.3 Regularized Solution in the Backus-Gilbert Method; References  
Chapter 4: Iterative Solutions of the Linear Inverse Problem

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#### Sommario/riassunto

Geophysical Inverse Theory and Applications, Second Edition, brings together fundamental results developed by the Russian mathematical school in regularization theory and combines them with the related research in geophysical inversion carried out in the West. It presents a detailed exposition of the methods of regularized solution of inverse problems based on the ideas of Tikhonov regularization, and shows the different forms of their applications in both linear and nonlinear methods of geophysical inversion. It's the first book of its kind to treat many kinds of inversion and imaging techni

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