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<<反问题的计算方法>>

图书基本信息

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内容概要

inverse problems arise in a number of important practical applications, ranging from biomedical imaging to seismic prospecting. this book provides the reader with a basic understanding of both the underlying mathematics and the computational methods used to solve inverse problems. it also addresses specialized topics like image reconstruction, parameter identification, total variation methods, nonnegativity constraints, and regularization parameter selection methods.

because inverse problems typically involve the estimation of certain quantities based on indirect measurements, the estimation process is often ill-posed. regularization methods, which have been developed to deal with this ill-posedness, are carefully explained in the early chapters of computational methods for inverse problems. the book also integrates mathematical and statistical theory with applications and practical computational methods, including topics like maximum likelihood estimation and bayesian estimation.

several web-based resources are available to make this monograph interactive, including a collection of matlab m-files used to generate many of the examples and figures. these resources enable readers to conduct their own computational experiments in order to gain insight. they also provide templates for the implementation of regularization methods and numerical solution techniques for other inverse problems. moreover, they include some realistic test problems to be used to develop and test various numerical methods.

computational methods for inverse problems is intended for graduate students and researchers in applied mathematics, engineering, and the physical sciences who may encounter inverse problems in their work.

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作者简介

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