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Nota di contenuto	The Mollification Method and the Numerical Solution of Ill-Posed Problems; Contents; Preface; Acknowledgments; 1. Numerical Differentiation; 1.1. Description of the Problem; 1.2. Stabilized Problem; 1.3. Differentiation as an Inverse Problem; 1.4. Parameter Selection; 1.5. Numerical Procedure; 1.6. Numerical Results; 1.7. Exercises; 1.8. References and Comments; 2. Abel's Integral Equation; 2.1. Description of the Problem; 2.2. Stabilized Problems; 2.3. Numerical Implementations; 2.4. Numerical Results and Comparisons; 2.5. Exercises; 2.6. References and Comments 3. Inverse Heat Conduction Problem3.1. One-Dimensional IHCP in a Semi-infinite Body; 3.2. Stabilized Problems; 3.3. One-Dimensional IHCP with Finite Slab Symmetry; 3.4. Finite-Difference Approximations; 3.5. Integral Equation Approximations; 3.6. Numerical Results; 3.7. Exercises; 3.8. References and Comments; 4. Two-Dimensional Inverse Heat Conduction Problem; 4.1. Two-Dimensional IHCP in a Semi-infinite Slab; 4.2. Stabilized Problem; 4.3. Numerical Procedure and Error Analysis; 4.4. Numerical Results; 4.5. Exercises; 4.6. References and Comments

5. Applications of the Space Marching Solution of the IHCP5.1. Identification of Boundary Source Functions; 5.2. Numerical Procedure; 5.3. IHCP with Phase Changes; 5.4. Description of the Problems; 5.5. Numerical Procedure; 5.6. Identification of the Initial Temperature Distribution; 5.7. Semi-infinite Body; 5.8. Finite Slab Symmetry; 5.9. Stabilized Problems; 5.10. Numerical Results; 5.11. Exercises; 5.12. References and Comments; 6. Applications of Stable Numerical Differentiation Procedures; 6.1. Numerical Identification of Forcing Terms; 6.2. Stabilized Problem; 6.3. Numerical Results 6.4. Identification of the Transmissivity Coefficient in the One-Dimensional Elliptic Equation6.5. Stability Analysis; 6.6. Numerical Method; 6.7. Numerical Results; 6.8. Identification of the Transmissivity Coefficient in the One-Dimensional Parabolic Equation; 6.9. Stability Analysis; 6.10. Numerical Method; 6.11. Numerical Results; 6.12. Exercises; 6.13. References and Comments; Appendix A. Mathematical Background; A.1.  $L_p$  Spaces; A.2. The Hilbert Space  $L_2()$ ; A.3. Approximation of Functions in  $L_2()$ ; A.4. Mollifiers; A.5. Fourier Transform; A.6. Discrete Functions A.7. References and CommentsAppendix B. References to the Literature on the IHCP; Index

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#### Sommario/riassunto

Uses a strong computational and truly interdisciplinary treatment to introduce applied inverse theory. The author created the Mollification Method as a means of dealing with ill-posed problems. Although the presentation focuses on problems with origins in mechanical engineering, many of the ideas and techniques can be easily applied to a broad range of situations.

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2. Record Nr.	UNINA9910637756603321
Autore	Brennecke Dennis
Titolo	Marine Mammals : A Deep Dive into the World of Science
Pubbl/distr/stampa	Cham : , : Springer International Publishing AG , , 2023 ©2023
ISBN	3-031-06836-X
Edizione	[1st ed.]
Descrizione fisica	1 electronic resource (95 p.)
Collana	Biomedical and Life Sciences Series
Altri autori (Persone)	KnickmeierKatrin Pawliczkalwona SiebertUrsula WahlbergMagnus
Soggetti	Zoology & animal sciences Veterinary medicine Ecological science, the Biosphere
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Sommario/riassunto	<p>This highly-readable Open Access textbook provides basic background information about marine mammals and anthropogenic impacts on them. The book includes inspiring exercises for education school programs in natural sciences. The book also provides advice on career paths using case studies of marine scientists and veterinarians describing their journeys from student to profession. By sharing real-life career paths, readers find answers to questions such as "What needs to be considered when choosing a career in science?" and "What kind of tasks do scientists undertake on a daily basis?" Marine mammals are amongst some of the most celebrated creatures on Earth, with their high intelligence, social and communicating skills, and capacity for deep diving. Alongside general information about marine mammals, the book aims at generating awareness of the impact of litter and noise pollution on the marine environment using marine mammals as an example. Huge numbers of marine animals, including marine mammals, die every year from entanglement in fishing gear, by</p>

ingestion of litter or because of chemical pollution. In the last decade many technological and scientific tools have been developed to aid research, for instance miniaturised sound recorders which can be attached to cetaceans and seals and record noise levels around them, their vocal production as well as their diving behaviour. This Open Access textbook can be used by undergraduate students interested in the fundamentals of marine mammal biology and medicine, and in pursuing the profession of a marine scientist.

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