

Multi-Wave Medical Imaging

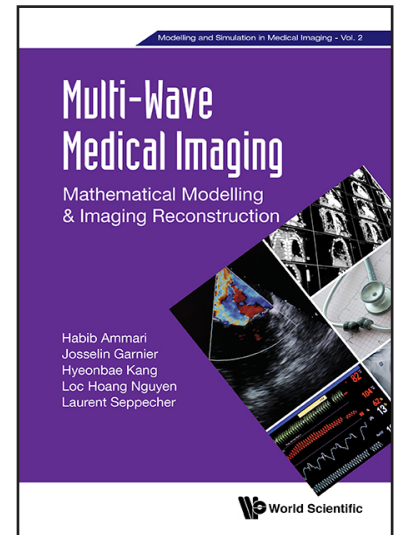
Mathematical Modelling & Imaging Reconstruction

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Description:

Super-Resolution imaging refers to modern techniques of achieving resolution below conventional limits. This book gives a comprehensive overview of mathematical and computational techniques used to achieve this, providing a solid foundation on which to develop the knowledge and skills needed for practical application of techniques. Split into five parts, the first looks at the mathematical and probabilistic tools needed, before moving on to description of different types of imaging; single-wave, anomaly, multi-wave and spectroscopic and nanoparticle.

As an important contribution to the understanding of super-resolution techniques in biomedical imaging, this book is a useful resource for scientists and engineers in the fields of biomedical imaging and super-resolution, and is self-contained reference for any newcomers to these fields.



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And Optimal Control/
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Contents:

- **Mathematical and Probabilistic Tools:**
 - Basic Mathematical Concepts
 - Layer Potential Techniques
 - Probabilistic Tools
 - General Image Characteristics
- **Single-Wave Imaging:**
 - Electrical Impedance Tomography
 - Ultrasound and Microwave Tomographies
 - Time-Harmonic Reverse-Time Imaging with Additive Noise
 - Reverse-Time Imaging with Clutter Noise
 - Optical Coherence Tomography with Clutter Noise
- **Anomaly Imaging:**
 - Small Volume Expansions
 - Anomaly Imaging Algorithms
- **Multi-Wave Imaging:**
 - Photoacoustic Imaging
 - Quantitative Thermoacoustic Imaging
 - Ultrasonically-Induced Lorentz Force Electrical Impedance Tomography
 - Magnetoacoustic Tomography with Magnetic Induction
 - Impediography
 - Microwave Imaging by Elastic Deformation
 - Ultrasound-Modulated Optical Tomography
 - Mechanical Vibration-Assisted Conductivity Imaging
 - Viscoelastic Modulus Reconstruction
 - Full-Field Optical Coherence Tomography
- **Spectroscopic and Nanoparticle Imaging:**
 - Effective Electrical Tissue Properties
 - Plasmonic Nanoparticle Imaging
 - Nonlinear Harmonic Holography