

Contents

Preface

Scattering Theory	1
On the Reconstruction of a Small Elastic Sphere in the Near Field by Point-Sources.....	3
<i>C.E. Athanasiadis, V. Sevroglou and I.G. Stratis</i>	
On the Interior Dipole Excitation of a Layered Chiral Scatterer.....	13
<i>C. Athanasiadis and N.L. Tsitsas</i>	
The Inverse Scattering Problem for Anisotropic Media.....	21
<i>F. Cakoni and D. Colton</i>	
On the Sensitivity of the Acoustic Scattering Problem in Prolate Spheroidal Geometry with Respect to Wavenumber and Shape via Vekua Transformation – Theory and Numerical Results.....	32
<i>L.N. Gergidis, D. Kourounis, S. Mavratzas and A. Charalambopoulos</i>	
The Detection of Point Scatterers in a Waveguide.....	38
<i>D. Gintides, K. Kiriaki, A. Lygidaki and L. Midrinos</i>	
Reconstruction of Acoustically Sound – Hard Obstacles From the far Field Using a Boundary Integral Equation Method.....	47
<i>O. Ivanyshyn and B.T. Johansson</i>	
An Integral Equation for the Scattering Problem for an Anisotropic Medium and the Factorization Method.....	57
<i>A. Kirsch</i>	
Electromagnetic Scattering from Buried Objects: A Bem Analysis	71
<i>A. Papacharalampopoulos, S.V. Tsinopoulos and D. Polyzos</i>	
Reconstruction of Complex Cracks by Farfield Measurements.....	82
<i>M. Sini</i>	
Integral Equation Modelling of Electromagnetic Wave Propagation and Scattering by Periodic Grating Waveguides	90
<i>N.L. Tsitsas</i>	
Scattering by an Infinite Elliptic Dielectric Cylinder.....	98
<i>G.D. Tsogkas, J.A. Roumeliotis and S.P. Savaidis</i>	

Low – Frequency Interaction of Magnetic Dipoles and Perfectly Conducting Spheroidal Bodies in a Conductive Medium	107
<i>P. Vafeas, G. Perrusson and D. Lesselier</i>	
Applied Mathematics / Scientific Computing	115
Spheroidal and Spherical Green’s Function for Stokes Flow	117
<i>G. Dassios</i>	
Polarizability of a sphere having an eccentric spherical inclusion.....	124
<i>G. Dassios, M. Hadjinicolaou and G. Kamvyssas</i>	
Evaluation of Vibrational Characteristics of Carbon Nanotube Resonators	133
<i>S.K. Georgantzinou, G.I. Giannopoulos and N.K. Anifantis</i>	
The Fluid Core Model for MEG Revisited: A Comparison with the Homogenous Case	141
<i>D. Hadjiloizi and F. Kariotou</i>	
Pole Assignment for Linear Discrete – Time Systems by Static Output Feedback	150
<i>G.I. Kalogeropoulos, A.A. Pantelous and D.P. Papachristopoulos</i>	
A Bem Study on the Wave Propagation of Guided Waves in Plates with Microstructural Effects	162
<i>G.F. Karlis, D. Polyzos, S.V. Tsinopoulos, M.G. Vavva and D.I. Fotiadis</i>	
A Time Domain Analysis for Chiral Deterministic and Random Media in Electromagnetics.....	171
<i>K.B. Liaskos, I.G. Stratis and A.N. Yannacopoulos</i>	
Numerical Simulation of Transient Waves Reflected by Surface Breaking Cracks in Concrete.....	180
<i>D. Pagidas, D. Polyzos, D.G. Aggelis and T. Shiotani</i>	
A New Method for Boundary Value problems and its Numerical Implementation	188
<i>E.A. Spence</i>	

Biomedical Engineering	197
β -Thalassemia's Social and Economic Geography: A Possible Prevention / Treatment Program to Rout "Legacy" Genetic Mutations.....	199
<i>A. Akay, A. Dragomir, A. Yardimci, D. Canatan, A. Yesilipek and B. Pogue</i>	
Influence of Microarchitecture on Cancellous Bone Ultrasonic Backscatter.....	211
<i>C. Apostolopoulos and D. Deligianni</i>	
Robust non – Invasive Estimation of Oxygen Saturation in Human Tissue	218
<i>G. Apostolopoulos, M. Vlachos and E. Dermatas</i>	
The Use of Derivative Dynamic Time Warping in Ant Colony Inspired Clustering.....	226
<i>M. Bursa and L. Lhotska</i>	
Improved Ant Colony Inspired Algorithms in Biomedical Data Processing	234
<i>M. Bursa, L. Lhotska and H. Huptych</i>	
Fuzzy Rule Based Decision Tree Classification of ECG Holter Beats	242
<i>V. Chudacek, M. Petrik, M. Huptych and L. Lhotska</i>	
On the Ellipsoidal Growth of Tumours.....	254
<i>G. Dassios, F. Kariotou and M.N. Tsampas</i>	
A Framework for Cancer Decision Support Based on Profiling by Integrating Clinical and Genomic Data: Application to Colon Cancer	261
<i>T.P. Exarchos, N. Giannakeas, Y. Goletsis, C. Papaloukas, and D.I. Fotiadis</i>	
Multiscale Modeling of Thrombosis by Finite Element (FE) and Dissipative Particle Dynamics (DPD) in the Large Arteries.....	269
<i>N. Filipovic, M. Kojic and A. Tsuda</i>	
SVM Classification of Holter ECG Beats Using Wavelet Features.....	281
<i>M. Huptych, G. Georgoulas, V. Chudacek, C. Stylios and L. Lhotska</i>	
Automatic Search of Individual Signal Complexes in Complex Fractionated Atrial Electrograms Using Wavelet Transform.....	289
<i>V. Kremen and L. Lhotska</i>	
Using PSO Algorithm to Optimize Parameters of Time – Domain Method for Complex Fractionated Atrial Electrograms Evaluation	297
<i>V. Kremen, L.Lhotska and M. Macas</i>	

Mathematical Modelling of Avascular and Vascular Tumour Growth.....305
P.F. Jones and B.D. Sleeman

Statistical Shape Recognition Study for Content – Based Medical Image
Retrieval.....332
A.D. Theodoss and G.A. Tsihrintzis

Weight Analysis and Optimization in Fuzzy Modeling.....340
M.G. Tsipouras, T.P. Exarchos and D.I. Fotiadis

Adaptive Help in a TV- Shopping Application for People with Special Needs348
M. Virvou, A. Savvopoulos

An Authoring Tool that Constructs Tutoring Personas for Medical e-Learning....356
M. Virvou and E. Alepis

Finger Vein Pattern Extraction Using Steerable Filters Based on Dyadic Wavelet
Transform.....364
M. Vlachos, E. Dermatas

Vessel Network Extraction in Retinal Images Using Iterative Line Tracking372
M. Vlachos, E. Dermatas

An-harmonic Analysis and the Arterial Pulse.....380
P.A. Voltairas, D I. Fotiadis and L K. Michalis

Author Index **389**