

IFMBE Proceedings

Volume 51

Series Editor

Ratko Magjarevic

Deputy Editors

Fatimah Binti Ibrahim
Igor Lacković
Piotr Ładyżyński
Emilio Sacristan Rock

The International Federation for Medical and Biological Engineering, IFMBE, is a federation of national and transnational organizations representing internationally the interests of medical and biological engineering and sciences. The IFMBE is a non-profit organization fostering the creation, dissemination and application of medical and biological engineering knowledge and the management of technology for improved health and quality of life. Its activities include participation in the formulation of public policy and the dissemination of information through publications and forums. Within the field of medical, clinical, and biological engineering, IFMBE's aims are to encourage research and the application of knowledge, and to disseminate information and promote collaboration. The objectives of the IFMBE are scientific, technological, literary, and educational.

The IFMBE is a WHO accredited NGO covering the full range of biomedical and clinical engineering, healthcare, healthcare technology and management. It is representing through its 60 member societies some 120.000 professionals involved in the various issues of improved health and health care delivery.

IFMBE Officers

President: Ratko Magjarevic, Vice-President: James Goh

Past-President: Herbert Voigt

Treasurer: Marc Nyssen, Secretary-General: Shankhar M. Krishnan

<http://www.ifmbe.org>

More information about this series at <http://www.springer.com/series/7403>

David A. Jaffray
Editor

World Congress on Medical Physics
and Biomedical Engineering,
June 7–12, 2015, Toronto, Canada

Editor

David A. Jaffray
University Health Network
Techna Institute
Toronto, ON
Canada

ISSN 1680-0737
IFMBE Proceedings
ISBN 978-3-319-19386-1
Printed in 2 Volumes
DOI 10.1007/978-3-319-19387-8

ISSN 1433-9277 (electronic)
ISBN978-3-319-19387-8 (eBook)

Library of Congress Control Number: 2015941128

Springer Cham Heidelberg New York Dordrecht London
© Springer International Publishing Switzerland 2015

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made.

The IFMBE Proceedings is an Official Publication of the International Federation for Medical and Biological Engineering (IFMBE)

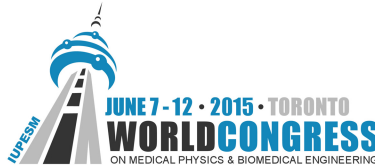
Printed on acid-free paper

Springer International Publishing AG Switzerland is part of Springer Science+Business Media (www.springer.com)

Hosts and Committees

Hosts

International Union for Physical and Engineering Sciences in Medicine (IUPESM)



The IUPESM represents the combined efforts of more than 40,000 medical physicists and biomedical engineers working on the physical and engineering science of medicine. The principal objectives of IUPESM are: (a) to contribute to the advancement of physical and engineering science in medicine for the benefit and wellbeing of humanity; (b) to organize international cooperation and promote communication among those engaged in health-care science and technology; (c) to coordinate activities of mutual interest to engineering and physical science within the health care field, including international and regional scientific conferences, seminars, working groups, regional support programs and scientific and technical publications; (d) to represent the professional interests and views of engineers and physical scientists in the health-care community.

International Organization for Medical Physics (IOMP)



The IOMP represents over 18,000 medical physicists worldwide, 80 adhering national member organizations and 6 regional organizations. The mission of IOMP is to advance medical physics practice worldwide by disseminating scientific and technical information, fostering the educational and professional development of medical physicists, and promoting the highest quality medical services for patients.

International Federation of Medical and Biological Engineering (IFMBE)



IFMBE is primarily a federation of national and transnational organizations. These organizations represent national interests in medical and biological engineering. The objectives of the IFMBE are scientific, technological, literary, and educational. Within the field of medical, biological and clinical engineering IFMBE's aims are to encourage research and the application of knowledge, and to disseminate information and promote collaboration.

Canadian Organization of Medical Physicists (COMP)

COMP is the main professional body for medical physicists practicing in Canada. The membership is composed of graduate students, professional physicists, scientists, and academics located at universities, hospitals, cancer centers, and government research facilities. Every member has an educational or professional background in physics or engineering as it applies to medicine. COMP's vision is to be the recognized leader and primary resource for medical physics in Canada. COMP's mission is to champion medical physicists' efforts for patient care excellence through education, knowledge transfer, advocacy and partnerships.

Canadian Medical and Biological Engineering Society (CMBES)

CMBES is Canada's principal society for engineering in medicine and biology. The Society's aims are twofold: scientific and educational: directed toward the advancement of the theory and practice of medical device technology; and professional: directed toward the advancement of all individuals in Canada who are engaged in interdisciplinary work involving engineering, the life sciences and medicine.

Committees

Congress Coordinating Committee

Herb Voigt, USA
Kin Yin Cheung, China
Ratko Magjarevic, Croatia

James Goh, Singapore
Madan M. Rehani, Austria
Shankar M. Krishnan, USA

Congress Organizing Committee

Co-Chair: David Jaffray, Canada
Co-Chair: Tony Easty, Canada
Secretary: Jean-Pierre Bissonnette, Canada

Finance Committee

Michael J. Capuano, Canada
Crystal Plume Angers, Canada
Kyle Eckhardt, Canada
Anchali Krisanachinda, Thailand

Shankar M. Krishnan, USA
Marc Nyssen, Belgium
Horacio Patrocínio, Canada
Peter Smith, Scotland, UK

International Advisory Committee

Monique Frize, Canada
Jacob Van Dyk, Canada
Herb Voigt, USA
Kin Yin Cheung, China
Ratko Magjarevic, Croatia
Muthana Al-Ghazi, USA
Rodolfo Alfonso-Laguardia, Cuba
Pedro Andreo, Sweden
Michael Balderson, Canada
Gilda Barabino, USA
Eva Bezak, Australia
Marin Bodale, Romania
Caridad Borrás, USA
Saide Calil, Brazil
Amanda Cherpak, Canada
Stelios Christofides, Cyprus
Luca Cozzi, Switzerland
Sarah G. Cuddy-Walsh, Canada
Carlos E. de Almeida, Brazil
Andre Dekker, Netherlands
Olga M. Dona Lemus, Canada
Ibrahim Duhaini, Lebanon
Yubo Fan, China
Dietmar Georg, Austria
Eduard Gershkevitch, Estonia

Birgit Glasmacher, Germany
Wassim Jalbout, Lebanon
Eleni Kaldoudi, Greece
Valeriy Kostylev, Russia
Shankar M. Krishnan, USA
Tomas Kron, Australia
Andrel Linnenbank, Netherlands
Susana B. Llanusa Ruiz, Cuba
Nigel Lovell, Australia
Loredana Marcu, Romania
Hasmik Martirosyan, Canada
Brendan McClean, Ireland
Kwan-Hoong Ng, Malaysia
Azam Niroomand-Rad, USA
Fridtjof Nuesslin, Germany
Marc Nyssen, Belgium
Nicolas Pallikarakis, Greece
Laura Poole-Warren, Australia
John Puentes, France
Paul B. Ravindran, India
Madan M. Rehani, Austria
Laura M. Roa, Spain
David Rogers, Canada
Howell Round, New Zealand
Otto Sauer, Germany

Slavik Tabakov, UK
Peck Ha Tan, Singapore
Nitish Thakor, Singapore
Virginia Tsapaki, Greece

Max Valentinuzzi, Argentina
Min Wang, China
Karin Wårdell, Sweden
Habib Zaidi, Switzerland

Publicity Committee

Marco Carlone, Canada
Jean Ngoie, Canada
Parminder Basran, Canada
Denis Derome, Canada
Young Lee, Canada

Marc MacKenzie, Alberta
Doug Moseley, Canada
Nadia Octave, Canada
Conrad Yuen, Canada

Sponsorship Committee

Murray Rice, Canada
Michael Sharpe, Canada
Michael J. Capuano, Canada

Marco Carlone, Canada
Nancy Barrett, Canada
Ibrahim Duhaini, Lebanon

Scientific Committee

David Jaffray, Canada
Tony Easty, Canada
Monique Frize, Canada

Luc Beaulieu, Canada
John Rowlands, Canada
Christopher Yip, Canada

Professional Standards Committee

Jerry Battista, Canada
Dave Gretzinger, Canada

Education Committee

Anthony Chan, Canada
Jean-Pierre Bissonnette, Canada
Andrew Ibey, Canada
Ervin Podgorsak, Canada
David Falagario, Canada
Jacob Van Dyk, Canada

Eric Tam, Hong Kong
Beatriz Sánchez, Chile
Mohcine El Garch, Canada
Gnahoua Zoabli, Canada
Antonio Hernandez, USA

Table of Contents

Volume 1

Part I: Imaging

Evaluation of the Difficulties of the Learning Process of Mammographic Readings	3
<i>P.C. Carneiro, L.O. Mamere, A.C. Patrocínio</i>	
Modeling Breast Cancer Tissue via Analysis of WAXS Signatures	7
<i>R.J. LeClair</i>	
Analysis of 80 kV WAXS Measurements with a CdTe Breast Biopsy Diffractometer	11
<i>N. McDonald, R.J. LeClair</i>	
Sensitometric Analyses of Screen-Film Systems for Mammography Exams in Brazil	15
<i>L.L. Medeiros, L.A.G. Magalhaes, J.J.S. Estrada, N.M.P.D. Ferreira, C.E. de Almeida</i>	
Actions for Implementation Program of Image Quality of Mammography	18
<i>R.B. Venancio, L.S. Oliveira, R Ribeiro, C.L. Debs, A.C. Patrocínio</i>	
The Potential of Spectral-CT for Material Decomposition with Gold-Nanoparticle and Iodine Contrast	22
<i>B. Jo, H.S. Im, H.J. Kim, T.J. Son, H.J. Kim</i>	
New Line Contrast Figure of Merit for Image Quality Assessment	26
<i>A. Dermitzakis, A. Daskalaki, K. Bliznakova, N. Pallikarakis</i>	
Assessment of Photostimulable Storage Phosphor Imaging Plates Quality in Computed Radiography	29
<i>B.Q. Friedrich, A.M. Marques da Silva, R.M. Luz, J.V. Real, A.S. Capaverde</i>	
Influence of Contrast Enhancement to Breast Density Classification by Using Sigmoid Function	33
<i>M.F. Angelo, P.C. Carneiro, T.C. Granado, A.C. Patrocínio</i>	
Evaluating Techniques of Transformation Intensity for Contrast Enhancement in Mammographic Images	37
<i>A.C. Patrocínio, R.J.P. de Lima, M.F. Angelo</i>	
Characterization and Analysis of the Physical Parameters in Dental X-Rays Phantom	41
<i>L.F. Silva, J.M. Santos, C.M.M. Paschoal, D.N. Souza, L.M. Brasil, F.C.L. Ferreira</i>	
Study on the Main Nonconformities Found in no Mammography Alagoas State	46
<i>J.R. Almeida Neto, C.M.M. Paschoal, D.N. Souza, L.M. Brasil, F.C.L. Ferreira</i>	
Absorbed Dose in PMMA and Equivalent Breast Phantom in a Digital Breast Tomosynthesis System: Monte Carlo Assessment	50
<i>L. Rodrigues, L.A.G. Magalhaes, D. Braz</i>	
2D/3D Registration for Motion Compensated Reconstruction in Cone-Beam CT of Knees under Weight-Bearing Condition	54
<i>M. Berger, K. Müller, J.-H. Choi, A. Aichert, A. Maier, R. Fahrig</i>	

Automatic Motion Estimation and Compensation Framework for Weight-bearing C-arm CT Scans Using Fiducial Markers	58
<i>K. Müller, M. Berger, J.-H. Choi, A. Maier, R. Fahrig</i>	
Towards Image Quality Analysis of Small and Full Field of View Dental Cone Beam CT Systems	62
<i>E.C. Hoffmann, A.M. Marques da Silva, D.F.G. Azevedo</i>	
Feasibility Study for 3D Cone-Beam Computed Tomography Reconstruction with Few Projection Data Using MLEM Algorithm with Total Variation Minimization	66
<i>D.H. Lee, Y.S. Kim, S.H. Choi, H.H. Lee, H.J. Kim</i>	
A Weighted Stochastic Gradient Descent Algorithm for Image Reconstruction in 3D Computed Tomography	70
<i>Davood Karimi, Rabab Ward, Nancy Ford</i>	
Investigation of Sparse-Angle View in Cone Beam Computed Tomography (CBCT) Reconstruction Algorithm Using a Sinogram Interpolation Method	74
<i>Dohyeon Kim, Su-Jin Park, Byungdu Jo, Hyemi Kim, Hee-Joung Kim</i>	
Non-Deterministic Optimization Using Differential Evolution Algorithm to Launch Seeds for Liver Segmentation in MDCT	78
<i>R.L. Thomaz, R. Anastácio, T.A.A. Macedo, A.C. Patrocinio, A.B. Soares</i>	
Anatomical Noise Model for CT Head Images: Preliminary Results	82
<i>R.A. Miller-Clemente, M. Perez-Diaz</i>	
Development of Dynamic Anthropomorphic Heart Phantom (DHAP)	85
<i>A. Ursani, M. Rice, S. Sajja, F. Ursani, N. Paul</i>	
Characterization of Vulnerable Plaque with Dual-Energy during CT Coronary Angiography: A Phantom Study	91
<i>A. Ursani, C. Hoy, Sachin Moghe, N.S. Paul</i>	
Performance of Attenuation-Based Dynamic CT Beam-shaping Filtration for Elliptical Subject Geometries in Dependence of Fan- and Projection-angle	95
<i>S. Veloza, H.U. Kauczor, W. Stiller</i>	
Gd-based Nanoparticles Mediated Magnetic Field Enhancement Inside Homogenous Tissue: Simulation Using Finite Element Method	99
<i>S. Rezaei, N. Riyahi-Alam, M. Ostovari</i>	
Optimization of Pulse-Triggered fMRI Measurement Delay with Acoustic Stimulation	103
<i>A. Król, Z. Drzazga, U. Klose</i>	
Numerical Simpson's Rule for Real Time and Accurate T2* Maps Generation Using 3D Quantitative GRE	107
<i>C. Fatnassi, R. Boucenna, H. Zaidi</i>	
Improvement of Pseudo Multispectral Classification of Brain MR Images	111
<i>C. Fatnassi, R. Boucenna, H. Zaidi</i>	
Unwrapping Highly Wrapped Phase Using Nonlinear Multi Echo Phase Unwrapping	115
<i>C. Fatnassi, R. Boucenna, H. Zaidi</i>	
Gadolinium Labeled Glycosylated Nanomagnetic Particles as Metabolic Contrast Agents in Molecular Magnetic Resonance Imaging	119
<i>S. Heydarnezhadi, N. Riyahi-Alam, S. Haghoo, M. Khobi, B. Nikfar, E. Gorji, B. Rafiei</i>	

Properties Evaluation of Gd ₂ O ₃ -DEG as New Contrast Agent Nanomagnetic Particles Comparing to Gd-DTPA in MRI	123
<i>B. Nikfar, N. Riahi Alam, S. Haghgoo, E. Gorji, H. Ghanaati, B. Rafiei, S. Heydarnezhadi, M.E. Khosroshahi</i>	
In Vitro and In Vivo Studies Glycosylated Gadolinium Nanomagnetic Particles (GD-DTPA-DG) as New Potential Metabolic Contrast Agent in MMRI	126
<i>S. Heydarnezhadi, N. Riyahi-Alam, S. Haghgoo, E. Gorji, H. Ghanaati, B. Rafiei</i>	
Intersex Differences in Posterior Eye Chamber by Spectral Optical Coherent Tomography	132
<i>K. Maciejewska, Iwona Pajonk, Zofia Drzazga</i>	
Understanding Lung Ultrasound Artifacts Using a Phantom Lung Model	136
<i>J.S. Loh, A.P. Walden, R.O. Cleveland</i>	
Quantitative Accuracy of SPECT Imaging with a Dedicated Cardiac Camera: Physical Phantom Experiments	147
<i>Amir Pourmoghaddas, R. Glenn Wells</i>	
Simultaneous Estimation of the Radioactivity Distribution and Electron Density Map from Scattered Coincidences in PET: A Project Overview	150
<i>Hongyan Sun, Mohammadreza Teimoorisichani, Bryan McIntosh, Geng Zhang, Harry Ingleby, Andrew Goertzen, Stephen Pistorius</i>	
Quantitative Functional Imaging with Hybrid PET-CT Via Improved Kinetics Modeling: Application to 18F-Fluorocholine PET Imaging of Prostate Cancer	154
<i>A.R. Blais, M. Dekaban, J. Hadway, T.Y. Lee</i>	
Experimental Study on Amplitude Frequency of Acoustic Signal Excited by Coupling Magneto-Acoustic Field	158
<i>R. Ma, S. Zhang, T. Yin, Z. Liu</i>	
4 Years of X-ray Imaging at 05B1-1 Beamline at BMIT	162
<i>G. Belev, D. Miller, N. Samadi, M.A. Webb, T.W. Wysokinski, N. Zhu, D. Chapman, D. Cooper</i>	
Indirect Measurement of Average Alveolar Dimension Using Dynamic Phase-Contrast Imaging	166
<i>M. Martinson, R.A. Lewis, A. Fouras, M. Siew, M. Wallace, S.B. Hooper, P. Babyn</i>	
Detectability in SPECT Myocardial Perfusion Imaging: Comparison between a Conventional and a Semiconductor Detector System	169
<i>C.M. Dartora, M.S. Favero, A.M. Marques da Silva</i>	
Monte Carlo Simulation of Interventional Cardiac Scenarios Using a Newborn Hybrid Phantom and MCNPX Code	173
<i>F.R. Cavalcante, A.B. Carvalho Júnior, W.S. Santos, Choonsik Lee</i>	
Quantitative Low-kVp CT Angiography in Carotid Artery Imaging	177
<i>Tingyu Mao, Pengwei Wu, Gaofeng Wang, Xiangyang Tang, Hongjie Hu, Tianye Niu</i>	
Characterization of Scatter Factors in Thyroid Studies Using a Pinhole Collimator by Monte Carlo Simulation	181
<i>S. Rodríguez, A. López, A. Díaz, A. Palau, J.M. Martín</i>	
The Use of Wavelet Filters for Reducing Noise in Posterior Fossa Computed Tomography Images	187
<i>R. Pita-Machado, M. Perez-Diaz, J.E. Paz-Viera, J.V. Lorenzo-Ginori, Y. Ruiz-Gonzalez</i>	
Automatic Liver Localization based on Classification Random Forest with KNN for Prediction	191
<i>Benwei Gong, Baochun He, Qingmao Hu, Fucang Jia</i>	

Brain Tumor Target Volume Segmentation: Local Region Based Approach	195
<i>Mehdi Astaraki, Hossein Aslian</i>	
Investigating Automatic Techniques in Segmentation Accuracy of Masses in Digital Mammography Images	199
<i>K.D. Marcomini, H. Schiabel</i>	
A Novel Automatic White Balance Algorithm for the 3D Image of Stereoscopic Endoscopy	203
<i>Yuan Hai, Ling Li, Jia Gu</i>	
Derivation of Residual Noise of Filtered Poisson and Gaussian Series	207
<i>W. Yao, J.B. Farr</i>	
Influence of ROI Pattern on Segmentation in Lung Lesions	211
<i>M.L.N. Franco, L.M. Nunes, A.P.P. Froner, A.M.M. Silva, A.C. Patrocinio</i>	
Comparison of Independent Component Analysis (ICA) Algorithm for Heart Rate Measurement Based on Facial Imaging	215
<i>L. Septiana, F. Hariyanto, K.P. Lin</i>	
Fast Registration of Intraoperative Ultrasound and Preoperative MR Images Based on Calibrations of 2D and 3D Ultrasound Probes	220
<i>Fang Chen, Ruizhi Liao, Hongen Liao</i>	
Comparison between Elliptical and Squared ROI to Launch an Automatic Seed to Region Growing Algorithm on Hepatic Segmentation Using CT Images	224
<i>R. Anastácio, R.L. Thomaz, C.R. de Moraes, G.C.M. de Almeida, T.O. Ferreira, M.R. Cândido, T.A.A. Macedo, A.C. Patrocinio</i>	
Automatic Analysis of Plantar Foot Thermal Images in at-Risk Type II Diabetes by Using an Infrared Camera	228
<i>L. Vilcahuaman, R. Harba, R. Canals, M. Zequera, C. Wilches, M.T. Arista, L. Torres, H. Arbañil</i>	
Development of an Anatomical Measurement and Data Analysis Tool Based on the Kinect Sensor for Physical Rehabilitation Applications	232
<i>D. Duarte-Dyck, A. Guillén-Peralta, G. Romo-Cárdenas, L. Callorda-Fedeczko</i>	
Evaluation of the OSC-TV Reconstruction Algorithm for Optical Cone-Beam Computed Tomography	236
<i>D. Matenine, Y. Goussard, P. Després</i>	
Optimization of Acquisition Parameters of the Test of an Overall SPECT/CT System Performance	240
<i>P. Tulik, M. Tomaszuk, P. Wojcik, A. Hubalewska-Dydejczyk, A. Sowa-Staszczak</i>	
Investigation of Presampled MTF Using a Slit Device with Slightly Wider Aperture	244
<i>Y. Kawaji, T. Gotanda, T. Shimono, S.J. Nakayama, M. Hisamoto, S. Matsumoto, A. Misago, R. Gotanda</i>	
Multiple Energy Synchrotron Biomedical Imaging System- Preliminary Results	248
<i>B. Bassey, M. Mercedes, N. Samadi, G. Belev, C. Karanfil, D. Chapman</i>	
Accuracy of Tissue Elasticity Measurement Using Shear Wave Ultrasound Elastography: A Comparative Phantom Study	252
<i>C.E. Ting, C.H. Yeong, K.H. Ng, B.J.J. Abdullah, H.E. Ting</i>	
Real-time Measurement of Cardiomyocyte Contraction and Calcium Transients Using Fast Image Processing Algorithms	256
<i>V. Čmiel, J. Odstrčilík, M. Ronzhina, I. Provazník</i>	

Renal Dynamic Phantom for Use in SPECT	260
<i>M.A. Dullius, M. Fonseca, M. Botelho, F.C.L. Ferreira, D. Souza</i>	
Part II: Biomaterials and Regenerative Medicine	
Cooling Rate Effects on the Microstructure Evolutions of Biodegradable Mg ₂ Ca Potential Medical Implant Alloy	267
<i>L.L. Zhou, Y. Yang, X.H. Qiu, Y.L. Peng</i>	
Chitosan: A Chitinous Biopolymer for The Treatment of Crude Oil Polluted Water	271
<i>Eileen E.C. Agoha, C. Atowa, Fatima Okafor, C.A. Ozodigwe</i>	
PEMF on Neuroblastoma Cells Previously Exposed to Antidepressants	274
<i>Teodoro Cordova-Fraga, Adolfo Toledo-Solano, Gloria Barbosa-Sabanero, Lérida Liss Flores-Villavicencio, Myrna Sabanero-López</i>	
Mapping the Stem Cell's Mechanome Using Paired Live Cell Multiplexed Imaging and Modeling	275
<i>Richard Oldfield, Iman Jalilian, Min Jae Song, Melissa Knothe Tate</i>	
Proliferation of Cardiomyocytes in Young Infants, Future Implication in Human Heart Regeneration	276
<i>Lincai Ye, Lishen Qiu, Haibo Zhang, Huiwen Chen, Chuan Jiang, Haifa Hong, Jinfen Liu</i>	
Optimization of Crosslinking Parameters for Biosynthetic Poly(vinyl-alcohol)-Tyramine Hydrogels	284
<i>K.S. Lim, Y. Ramaswamy, M.-H. Alves, R.A. Green, L.A. Poole-Warren, P.J. Martens</i>	
A Synchrotron Radiation Microtomography Study of Wettability and Swelling of Nanocomposite Alginate/Hydroxyapatite Scaffolds for Bone Tissue Engineering	288
<i>F. Brun, G. Turco, S. Paoletti, A. Accardo</i>	
Scaffold Prototype for Heart Valve Tissue Engineering: Design and Material Analyses	292
<i>M.M.O. Simbara, R.C. Carbonari, S.M. Malmonge</i>	
Finite Element Analysis of Abdominal Aortic Aneurysms to Predict Risk of Rupture - The Role of the Thrombosis Thicknesses	296
<i>Omar Altuwaijri</i>	
Study on Preparation and Mechanical Properties of Polyurethane Foam with Negative Poisson's Ratio	300
<i>Lizhen Wang, Yifan Liu, Yubo Fan</i>	
Part III: Biomechanics and Artificial Organs	
Hematological, Biochemical, and End-organ effects of the CH-VAD in Ovine Model	305
<i>C.Y. Lin, X.J. Liu, C.Y. Xu, G.H. Wu, X.T. Hou, H.Y. Li, C. Chen, P. Yang</i>	
Dysfunction Screening in Experimental Arteriovenous Grafts for Hemodialysis Using Inflow and Outflow Hemodynamic Game Analysis	309
<i>Wei-Ling Chen, Chung-Dann Kan, Chia-Hung Lin</i>	
The Continuous Flow Total Artificial Heart in Clinical Practice	318
<i>David Macku</i>	
Improved Semi-automated 3D Kinematic Measurement of Total Knee Arthroplasty Using X-ray Fluoroscopic Images	322
<i>T. Yamazaki, R. Kamei, T. Tomita, Y. Sato, H. Yoshikawa, K. Sugamoto</i>	

A New Method for Determining the Effect of Follower Load on the Range of Motions in the Lumbar Spine	326
<i>Cheng-Fei Du, Jun-Chao Guo, Yun-Peng Huang, Yu-Bo Fan</i>	
A Simple External Fixation Technique for Treating Bicondylar Tibial Plateau Fracture: A Finite Element Study	330
<i>W.C. Lin, K.J. Lin, C.H. Chen, B.H. LI, J.Y. Li, W.C. Chen, C.L. Tsai, S.C. Huang, K.P. Lin</i>	
Modelling and Understanding Normal Pressure Hydrocephalus	333
<i>C. Goffin, A. Holterhoff, S. Leonhardt, K. Radermacher</i>	
The Protective Effect of the Eyelid on Ocular Injuries in Blunt Trauma	338
<i>Xiaoyu Liu, Lizhen Wang, Jing Ji, Yubo Fan</i>	
Fingertip Touch Adjust Postural Orientation During Perturbed Stance	342
<i>Aizreena Azaman, Shin-ichiroh Yamamoto</i>	
Impact of Gait Modifications on Hip Joint Loads during Level Walking	346
<i>M. Higa, F. Kawabata, Y. Kobayashi, K. Fukuda</i>	
Effects of Changing Small Airway Mechanics and Inspiratory Flow Waveforms on Pulmonary Ventilation: A Modeling Study	350
<i>Tianya Liu, Yuxing Wang, Jian Ma, Deyu Li, Yubo Fan</i>	
Part IV: Radiation Oncology	
Acceptance Modulated Radiation Intensity and Enhanced Dynamic Wedge Using 2D Ion Chamber Array	357
<i>O.J. Garcia Contreras, L.D. Casas</i>	
Monte Carlo Study for the Design of a Novel Gamma - Tomo SBRT System	358
<i>G. Mora, O. Chibani, A. Eldib, J. Li, C.M. Ma</i>	
A Statistical Study Based on Comparison between Two Treatment Planning Systems While Exporting RT Structure Set	364
<i>Richa Sharma, Kamlesh Rani Passi, Konthoujam Manimala Devi, Sandhya Sood</i>	
GMM Guided Automated Level Set Algorithm for PET Image Segmentation	368
<i>C.D. Soffientini, E. De Bernardi, G. Baselli, I. El Naqa</i>	
A Method to Convert Cone-Beam Computed Tomography (CBCT) Image for Dose Calculation and the Phantom Evaluation	372
<i>Guang-shun Zhang, Shao-min Huang, Cui Chen, Dan-dan Zhang, Xiao-wu Deng</i>	
Development of a Multi-Modality 4D Biomechanical Phantom for Evaluation of Simultaneous Registration/Segmentation Algorithms	373
<i>D. Markel, J. Larkin, P. Leger, I.R. Levesque, I. El Naqa</i>	
Edge Detection for Biological Tumor Volume Definition Based on FDG-PET/CT-fused Imaging: Evaluation of Diffusion Processes by Using an Agar Phantom	377
<i>H. Amaya, W. Stiller, S. Veloz</i>	

International Multi-Institutional Bench Mark Study on Dosimetric and Volumetric Modulation Using Helical TomoTherapy Treatment Planning for Malignant Pleural Mesothelioma Tumors	381
<i>Allen Movahed, Tommy Knöös, Claire Foottit, André Haraldsson, Dirk Verellen, Koen Tournel, Sharon Qi, Dale Matson, Thuy Lau, Milton Vargas, Somsak Wanwilairat, Christine Higby, Osama Hassad, Belal Moftah, Thomas Lacornerie, Antoine Wagner, Hew Choon Soong</i>	
Dependence of Collimator Angle on Prostate VMAT: A Treatment Planning Study	384
<i>Muhammad Isa, Jalil ur Rehman, Muhammad Afzal, James C.L. Chow</i>	
Adaptive Radiotherapy for Bladder Cancer Using Deformable Image Registration of Empty and Full Bladder	388
<i>P. Juneja, H. Caine, P. Hunt, J. Booth, D. Thwaites, J. O'Toole, A. Vestergaard, J. Kallehaug, A. Kneebone, T. Eade</i>	
Dosimetric and Clinical Benefits of Conformal Radiotherapy Plus Volumetric Modulated Arc Therapy in the Treatment of Non-small Cell Lung Cancer	392
<i>Xiance Jin, Congying Xie</i>	
Peripheral Neutron Dose Estimation: Comparison between Experimental Measurements and TPS Estimation	397
<i>L. Irazola, M. Ortiz-Seidel, M.T. Garcia-Hernandez, J.A. Terron, B. Sanchez-Nieto, R. Bedogni, F. Sanchez-Doblado</i>	
Non-Uniform Spatiotemporal Fractionation Schemes in Photon Radiotherapy	401
<i>J. Unkelbach</i>	
Dosimetric Impact of Accurately Delineating of the Left Anterior Descending Artery in Photon and Proton Radiotherapy	405
<i>J. Blanco Kiely, B.M. White, S. Vennarini, A. Dimofte, L. Lin, G. Freedman, S. Both</i>	
The Role of VMAT Interplay Effects for Liver Stereotactic Body Radiation Therapy	409
<i>G. Ecclestone, G. Pierce</i>	
Objective Function Surrogates for Iterative Beam Angle Selection	413
<i>M. Bangert, J. Unkelbach</i>	
A Preliminary Study on the Effect of Modulated Photon Radiotherapy (XMRT) Optimization for Prostate Cancer Treatment Planning	417
<i>Philip McGeachy, Jose-Eduardo Villarreal-Barajas, Yuriy Zinchenko, Pooyan Shirvani, Rao Khan</i>	
Compressed Sensing-Based LDR Brachytherapy Inverse Treatment Planning with Biological Models	421
<i>C.V. Guthier, K.P. Aschenbrenner, F. Wenz, J.W. Hesser</i>	
Knowledge Modeling for Computer Aided Treatment Planning	425
<i>Q.J. Wu, L. Yuan, T. Li, F. Yin, Y. Ge</i>	
Interplay of MLC, Gantry and Respiratory Motion during DCAT Delivery	428
<i>T. Kairn, J. Mitchell, S.B. Crowe, J.V. Trapp</i>	
Measuring Radiation Treatment Plan Similarity in the Cloud	432
<i>J. Andrea, C. Pinter, G. Fichtinger</i>	
A Memetic Algorithm for Body Gamma Knife Stereotactic Radiotherapy Treatment Planning	436
<i>Bin Liang, Bo Liu, Fugen Zhou, Bin Guo, Xuanang Xu, Jingbo Kang, Jianguo Li, Wei Liu</i>	

Knowledge based Automatic Beam Angle Determination for Lung IMRT Planning	440
<i>L. Yuan, Y. Ge, Y. Sheng, F. Yin, Q.J. Wu</i>	
Dosimetric Evaluation of the Interplay Effect for Non-Respiratory-Gated VMAT Treatment of Moving Targets with High Dose Rate FFF Beams	444
<i>A.G. Smith, C. Serago, K. Hintenlang, S. Kim, D. Hintenlang</i>	
Use of Flattening Filter Free Photon Beams for Off-Axis Targets in Conformal Arc Stereotactic Body Radiation Therapy	448
<i>A. Smith, S Kim, C. Serago, K. Hintenlang, D. Hintenlang, M. Heckman</i>	
Dose Calculation in Gynecological Brachytherapy Using Monte Carlo Simulation for Intracavitary Treatment of Cervical Cancer	452
<i>O.J. García Contreras, F. Cristancho</i>	
A Dosimetric Evaluation of Interface Effects Using Two Commercial Electron Treatment Planning Algorithms	456
<i>B. Catt, M. Yudelev</i>	
Ray Tracing Algorithm for Virtual Source Modeling Based on Evaluation of Rounded Leaf End Effect of Multileaf Collimator	460
<i>Dong Zhou, Hui Zhang, Peiqing Ye</i>	
Impact of In-Homogeneity Corrected Dose Calculation of Clinical Brachytherapy Sites	463
<i>S.V. Jamema, Siji N. Paul, Reena Devi, Kishore Joshi, Ashwini Budrukkar, S. Laskar, S.G. Laskar, Umesh Mahantshetty, Mayur Sawant, Pooja Moundekar, D.D. Deshpande</i>	
A Novel System for Real-Time Planning and Guidance of Breast HDR Brachytherapy	467
<i>E. Poulin, L. Gardi, K. Barker, J. Montreuil, J. Pouliot, A. Fenster, L. Beaulieu</i>	
Samarium-153 Labelled Microparticles for Targeted Radionuclide Therapy of Liver Tumor	471
<i>N.A.A. Hashikin, C.H. Yeong, B.J.J. Abdullah, K.H. Ng, L.Y. Chung, R. Dahalan, A.C. Perkins</i>	
Monte Carlo-based Inverse Treatment Plan Optimization for Intensity Modulated Proton Therapy	475
<i>Y. Li, Z. Tian, T. Song, Z. Wu, Y. Liu, S.B. Jiang, X. Jia</i>	
A Beam Angle Optimization Technique for Proton Pencil Beam Scanning Treatment Planning of Lower Pelvis Targets	479
<i>J. Blanco Kiely, B.M. White, S. Both</i>	
Dosimetry of Pacemaker in VMAT for Lung SBRT	483
<i>James C.L. Chow, Runqing Jiang</i>	
Grid Therapy: Impact of Radiobiological Models on Calculation of Therapeutic Ratio	487
<i>S. Gholami, H.A. Nedaie, A.S. Meigooni, F. Longo</i>	
Impact of Increasing Irradiation Time on the Treatment of Prostate Cancers	490
<i>A. Dasu, I. Toma-Dasu</i>	
Cone-Beam CT Assessment of Inter-Fraction and Intra-Fraction Motions during Lung Stereotactic Body Radiotherapy with and without Abdominal Compression	494
<i>M. Zhang, R. Jiang, L. Zhan</i>	

A Novel Couch-Gantry Trajectory Based Stereotactic Treatment Method	497
<i>B. Wilson, K. Otto, E. Gete</i>	
The Effect of Assessment Criteria on Inter-Rater Variability in the Evaluation of Skin Reactions following Breast Cancer Radiation Therapy	501
<i>R. Goyal, A.J. Blood, L. Potters, A. Kapur</i>	
Can Parametric Response Maps Predict Voxel-Wise Treatment Response? Implications for Locally Adaptive Radiotherapy	505
<i>A. Lausch, T.P.C. Yeung, E. Fainardi, T.Y. Lee, J. Chen, E. Wong</i>	
A Hardware-Accelerated Software Platform for Adaptive Radiation Therapy	509
<i>Seyoun Park, William Plishker, Adam Robinson, George Zaki, Raj Shekhar, Todd McNutt, Harry Quon, John Wong, Junghoon Lee</i>	
Raman Spectroscopy for Assessment of Radiation Therapy Response: Pre-Clinical Animal Study Results for Lung Cancer	513
<i>S. Devpura, K.N. Barton, S.L. Brown, Y. Zhang, S. Sethi, M.D. Klein, F. Siddiqui, I.J. Chetty</i>	
Evaluation and Visualization of Radiogenomic Modeling Frameworks for the Prediction of Normal Tissue Toxicities	517
<i>James Coates, Asha K. Jeyaseelan, Norma Ybarra, Jessie Tao, Marc David</i>	
3D Slicer Gel Dosimetry Analysis: Validation of the Calibration Process	521
<i>K.M. Alexander, C. Pinter, J. Andrea, G. Fichtinger, L.J. Schreiner</i>	
Comparison of AAA and CCC Algorithms for H&N Rapid Arc Pre-treatment QA	525
<i>T.M. Ramaloko, J.K. Bhengu</i>	
In Vivo EPID Dosimetry Detects Interfraction Errors in 3D-CRT of Rectal Cancer	531
<i>S. Peca, D. Brown, W.L. Smith</i>	
The Characteristics and Implementation of XR-RV3 GafchromicFilm for Radiotherapy Dosimetry	535
<i>S.A. Pawiro, A. Fergiawan, P. Hudigomo, S. Soegijono, A. Nainggolan, D.S. Soejoko</i>	
Quality Assurance of the Radiotherapy Workflow Integrating a Dedicated Wide-bore 3T MRI Simulator	539
<i>A. Xing, G.P. Liney, L. Holloway, S. Arumugam, R. Rai, E. Juresic, G. Goozee</i>	
Dosimetric Commissioning of High End Features in Radiotherapy Treatment Planning Systems: A Proposed Update of the IAEA TECDOC-1583 Guidelines	543
<i>R. Alfonso, L. de la Fuente, H. Linares, J. Cofre, A. Hermosilla, Y. Ascención, Y. González, R. Diaz, E. Larrinaga</i>	
VMAT Delivery through Couch Tops: An Illustration of Loss of Dose Coverage for Prostate Plans	547
<i>Monique van Prooijen, Daria C. Comsa, Mohammad K. Islam, Robert K. Heaton</i>	
Electronic Portal Imaging Device Dosimetry for IMRT: A Review on Commercially Available Solutions	553
<i>Omehm Bawazeer, Sisira Herath, Siva Sarasanandarajah, Pradip Deb</i>	
Anatomical Modelling of the Pregnant Radiotherapy Patient	557
<i>T. Kairn, S.B. Crowe, J. Mitchell, D. Schlect, J.V. Trapp</i>	
Estimating Setup Margins Using IGRT Techniques: Preliminary Results in Havana	561
<i>R. Argota, E. Larrinaga, F. García</i>	

¹⁸ F-NaF PET/CT-Directed Dose Escalation in Stereotactic Body Radiotherapy Spine Oligometastases from Prostate Cancer	565
<i>L. Wu, S.A. Kwee, M. Li, X. Peng, L. Xie, Z. Lin, H. Wang, Y. Kuang</i>	
Weighted Comprehensive Score Evaluation of CBCT Image Guided Positioning Accuracy in Lung Cancer Radiation Treatment	569
<i>Ying-lin Peng, Song-ran Liu, Bo-tian Huang, Dan-dan Zhang, Wen-zhao Sun, Hui Liu, Xiao-wu Deng</i>	
An Automatic Dosimetric and Geometric Tracking System for Head and Neck Adaptive Radiotherapy	570
<i>Chang Liu, Akila Kumarasiri, Mona Kamal, Mikhail Chetvertkov, James Gordon, Hualiang Zhong, Farzan Siddiqui, Indrin J. Chetty, Jinkoo Kim</i>	
Drift Correction Techniques in the Tracking of Lung Tumor Motion	575
<i>P.T. Teo, K. Guo, N. Alayoubi, K. Kehler, S. Pistorius</i>	
Morphological Analysis of Tumor Regression and Its Impact on Deformable Image Registration for Adaptive Radiotherapy of Lung Cancer Patients	579
<i>H. Zhong, J. Kim, J.J. Gordon, S.L. Brown, B. Movsas, I.J. Chetty</i>	
Retrospective Evaluation of Visually Monitored Deep Inspiration Breath Hold for Breast Cancer Patients Using Edge Detection	583
<i>L. Conroy, R. Yeung, S. Quirk, T. Phan, W.L. Smith</i>	
The Impact of Audio-Visual Biofeedback with a Patient-Specific Guiding Waveform on Respiratory Motion Management: Comparison of Two Different Respiratory Management Systems	587
<i>Y. Nakajima, N. Kadoya, S. Kida, K. Ito, T. Kanai, K. Kishi, K. Sato, S. Dobashi, K. Takeda, H Matsushita, K. Jingu</i>	
Feasibility of Markerless Tumor Tracking by Sequential Dual-Energy Fluoroscopy on a Clinical Lung Tumor Tracking System	591
<i>J. Dhont, K. Poels, D. Verellen, K. Tourmel, T. Gevaert, F. Steenbeke, M. De Ridder</i>	
Application and Parametric Studies of a Sliding Window Neural Network for Respiratory Motion Predictions of Lung Cancer Patients	595
<i>P.T. Teo, N. Bruce, S. Pistorius</i>	
Dose and Position Quality Assurance Using the RADPOS System for 4D Radiotherapy with CyberKnife	599
<i>R. Marants, E. Vandervoort, J.E. Cygler</i>	
Development of an MR and CT Compatible Non-Invasive Temperature Based Optical Fiber Respiration Sensor for Use in Radiotherapy	603
<i>A. Smith, S. Kim, C. Serago, K. Hintenlang, R. Pooley, D. Hintenlang</i>	
Beta Enhancers: Towards a Local Dose Enhancer Device for Boron Neutron Capture Therapy (BNCT) on Superficial Tumors	607
<i>E.F. Boggio, J. Longhino, L. Provenzano, R. Farias, S. González, S. Nievas, A. Dagrosa</i>	
The Use of Boron Neutron Capture Therapy in the Treatment of Cancer Tumours in the Czech Republic	614
<i>V. Burianova, L. Sklenka, I. Jurickova</i>	
A Software App for Radiotherapy with In-situ Dose-painting Using High Z Nanoparticles	618
<i>M. Jermoumi, A. Yucel, Y. Hao, G. Cifter, E. Sajo, W. Ngwa</i>	

Table of Contents	XIX
Performing Radiation Therapy Research Using the Open-Source SlicerRT Toolkit	622
<i>Csaba Pinter, Andras Lasso, An Wang, Gregory C. Sharp, Kevin Alexander, David Jaffray, Gabor Fichtinger</i>	
Part V: Dosimetry and Radiation Protection	
Destructive Backscatter-based Readout of Polymer Gel Dosimeters: Proof of Principle	629
<i>W.G. Campbell, D.M. Wells, A. Jirasek</i>	
Dosimetric Comparison of 3DCRT, IMRT and VMAT for Spine Radiotherapy Based on Secondary Cancer Risk	633
<i>Jalil ur Rehman, J. Ashraf, Muhammad Isa, Muhammad Afzal, G. Ibbott, James Chow</i>	
Dosimetric Effect of Beam Angle on the Unflattened and Flattened Photon Beams: A Monte Carlo Study	637
<i>James C.L. Chow, Amir M. Owringi</i>	
An Attempt to Predict the Proton Relative Biological Effectiveness Using Radical Recombination	641
<i>Kiyofumi Haneda</i>	
Effects of Cable Extension and Photon Irradiation on TNRD Neutron Detector in Radiotherapy	645
<i>L. Irazola, J.A. Terron, B. Sanchez-Nieto, R. Bedogni, F. Gomez, F. Sanchez-Doblado</i>	
Study of the Response of Ionization Chambers in Photon Beams for Off-axis Point Dose	649
<i>T. Shimono, K. Matsubara, Y. Kawaji, T. Gotanda, H. Okuda, R. Gotanda</i>	
Minimum Planning Target Volume Coverage Necessary for the Delivery of the Prescribed Dose in Lung Radiotherapy	653
<i>M.R. Murdoch, M. Wierzbicki</i>	
Suitability of Diodes for Point Dose Measurements in IMRT/VMAT Beams	657
<i>T. Kairn, S. Ibrahim, E. Inness, S.B. Crowe, J.V. Trapp</i>	
Energy Correction Factor for Plane Parallel ion-chamber and it's Use in Clinical Photon Beam Dosimetry	661
<i>Konhoujam Manimala Devi, Arun Oinam, Kamlesh Rani Passi, S.C. Sharma</i>	
Dosimetric Verification for Tangential Breast Irradiation in Commercial Treatment Planning System Using Indigenous Female Wax Torso	666
<i>Kamlesh Rani Passi, Saran raj, Konhoujam Manimala, Ishu Sharma, Naveen Kanda, Sandhya sood</i>	
On the Practical Use of Calorimetry for Routine Absolute Dosimetry in the Radiotherapy Clinic	667
<i>J. Renaud, A. Sarfehnia, J. Seuntjens</i>	
In-vivo and Pre-treatment Quality Assurance Software Validation and Verification	671
<i>E. Vanzi, L. Reversi, G. Giani, C. Arilli, P. Bonomo, M. Casati, A. Compagnucci, D. Greto, L. Marrazzo, S. Scoccianti, S. Pallotta, M. Bucciolini, C. Talamonti</i>	
Therapeutic Applications and Dosimetry of Radiopharmaceuticals with the Help of Compartmental Analysis	674
<i>Sajad Abedi</i>	
Very Small Circular Fields Output Factors: Comparison of MC Calculations, EBT3 Film and Micro-diamond Measurements	679
<i>E. Alhakeem, S. Zavgorodni</i>	

A Novel Tool for in Vivo Dosimetry in Diagnostic and Interventional Radiology Using Plastic Scintillation Detectors	680
<i>J. Boivin, S. Beddar, M. Guillemette, L. Beaulieu</i>	
First Data on Quality Control Test Done in Diagnostic X-ray Facility at Major Public Hospitals in Kathmandu Valley, Nepal	685
<i>K.P. Adhikari, N. Ghimire, P. Gautam, T. Adhikari</i>	
Lung Dose Estimation for a Total Body Computed Tomography Protocol	689
<i>J.C. Martins, D.Y. Nersissian, P.R. Costa</i>	
Estimation of Dose Distributions in Mammography into a Tissue Equivalent Phantom	692
<i>J.C. Santos, A. Tomal, T. Furquim, P.R. Costa</i>	
Dosimetric Analysis of Patient to a Z-Gradient Coil in Head Magnetic Resonance Imaging	695
<i>M. Lu, S. Ueno</i>	
Gamma Cameras Calibration for I-131 Uptake Quantification in Hyperthyroidism Diseases	699
<i>A. López, R. Reynosa, A. Palau, J.M. Martín, J. Castillo, L.A. Torres, F. Batle</i>	
Patient and Staff Dose Optimization in Nuclear Medicine Diagnosis Methods	704
<i>Sajad Abedi</i>	
Radiation Dose Assessment of ^{99m} Tc-labeled Tetrofosmin in Patients Undergoing Rest-Stress Myocardial Perfusion Scintigraphy	708
<i>S. Veloza, E.A. Ramirez</i>	
Verifying Dynamic Planning in Gamma Knife Radiosurgery Using Gel Dosimetry	712
<i>Gopishankar Natanasabapathi, Subbiah Vivekanandhan, Shashank Sharad Kale, Raj Kishor Bisht, Goura kishor Rath, Priyanka Agarwal, Palanivel Sathiaraj, Bhawani Shankar Sharma</i>	
Towards Optical CT Scanning of Radiochromic 3D Dosimeters in Mismatched Refractive Index Solutions	716
<i>K.H. Dekker, J.J. Battista, K.J. Jordan</i>	
Evaluation of the Eye Lens Dose According to Patient Setup Errors in Pediatric Head CT Examination	720
<i>R. Gotanda, T. Katsuda, T. Gotanda, K. Noguchi, E. Nakajima, T. Akagawa, N. Tanki, A. Tabuchi, T. Kuwano, T. Shimono, Y. Kawaji, H. Sato, Y. Takeda</i>	
Application of Dose Gels in HDR Brachytherapy	724
<i>D. Adliene, K. Jakstas, N. Vaiciunaite, J. Laurikaitiene, R. Cerapaitė-Trusinskiene</i>	
Use of 3D Printed Materials as Tissue-Equivalent Phantoms	728
<i>T. Kairn, S.B. Crowe, T. Markwell</i>	
Development of Object Simulator for Evaluation Periapical Radiographs	732
<i>J.M.S. Mendes, E.S. Sales Junior, C.M.M. Paschoal, C.J. Cunha, L.M. Brasil, F.C.L. Ferreira</i>	
A Contribution to the Establishment of Diagnostic Reference Levels in Computed Tomography in Brazil	737
<i>L.D.L. Narciso, N.W. Lima, C.M. Dartora, A.M. Marques da Silva</i>	

Table of Contents	XXI
Personal Time-Varying Magnetic Fields Evaluation during Activities in MRI Sites	741
<i>G. Acri, B. Testagrossa, G. Vermiglio</i>	
Review UAE Dental Radiology Dosimetry Results for National DRLs Establishment	745
<i>Fatima S. Al Kaabi, Jamila S. AlSuwaidi, Jacek Janaczek, Alfian S. Al Ameri, Sara M. Booz, Wadha M. AlShamsi</i>	
Simple Expression of Doses for X-rays below 1 MeV Grazing Incident on Shields of Concrete and Iron Backed by Lead	748
<i>N. Nariyama</i>	
Energy Response of the GAFCHROMIC EBT3 in Diagnosis Range	752
<i>T. Gotanda, T. Katsuda, R. Gotanda, T. Kuwano, T. Akagawa, N. Tanki, A. Tabuchi, T. Shimono, Y. Kawaji, T. Ideguchi</i>	
Determination of the Uncertainty in the Cross-calibration of an Ionization Chamber Used in Radiation Therapy	756
<i>Pedro H.B. Cardoso, Gustavo F. Tietz, Wellington F.P. Neves-Junior, Cecília M.K. Haddad, Ricardo A. Terini</i>	
Reaction of Three UV Exposure to Gafchromic EBT-2 and EBT-3	759
<i>T. Katsuda, T. Gotanda, R. Gotanda, T. Akagawa, N. Tanki, T. Kuwano, K. Yabunaka</i>	
Noise Reduction of Radiochromic Film: Median Filter Processing of Subtraction Image	763
<i>T. Katsuda, T. Gotanda, R. Gotanda, T. Akagawa, N. Tanki, T. Kuwano, K. Yabunaka</i>	
Reference and Relative Dosimetry of Standard and Small Photon Fields with New Commercially Available Detectors	767
<i>B.R. Muir, M.R. McEwen</i>	
Regional Survey of Pediatric Patient Doses from CT Examinations in Tehran, Iran	771
<i>H.R. Khosravi, L. Sadri, S. Setayeshi, K. Asnaashari, M. Midia</i>	
Occupational Dose Measurement in an Interventional Radiology Facility in Jakarta	775
<i>L.E. Lubis, N. Aida, N.G. Pratiwi, S.A. Pawiro, K.T. Wigati, D.S. Soejoko</i>	
Assessment of Patient and Staff Doses in Interventional Cerebral Angiography Using OSL	778
<i>C.A.B. Gonzales, A.A. Morales Jr.</i>	
Assessment of Patient Dose in Selected Non-Cardiac Interventional Fluoroscopy Procedures Using OSL Dosimeters	783
<i>I.A. Elona, A.A. Morales Jr.</i>	
Evaluation of the Comparative Effectiveness of Various Jurisdictional Computed Tomography Radiation Dose Reduction Models	787
<i>A. Li, M. Fan, A. Easty</i>	
Evaluation of Dental X-rays Equipment in Sobral-CE, Brazil	791
<i>F.L. Menezes, F.C. Ferreira, C.M.M. Paschoal</i>	
Proposed Guidelines for Image Quality Optimization in Chest PA X-Ray Examinations In Bangladesh	795
<i>Shahed Khan, Eleonora Santos</i>	

Part VI: New Technologies in Cancer Research and Treatment

Plan Optimization for a Lung Patient on a Parallel Linac-MR System	801
<i>D. Tamagi, B. Warkentin, A. Keyvanloo, B.G. Fallone, C. Field</i>	
Ex-vivo Experimental Study with a New Cluster-type Microwave Ablation Antenna	805
<i>Qun Nan, Xiaohui Nie, Xuemei Guo, Zhen Tian, Kai Yan</i>	
On Understanding of the Limiting Factors in Radiofrequency Ablation on Target Tissue Necrosis Volume	809
<i>B. Zhang, M.A.J. Moser, E.M. Zhang, Y. Luo, W. Zhang</i>	
Dose Enhancement in Radiotherapy by Novel Application Of Gadolinium Based MRI Contrast Agent Nanomagnetic Particles in Gel Dosimetry	816
<i>M. Amirrashedi, N. Riyahi alam, A. Mostaar, S. Haghgoo, E. Gorji, R. Jaber</i>	
Synthesis and Characterization of SPION Functionalized Third Generation Dendrimers Conjugated by Gold Nanoparticles and Folic Acid for Targeted Breast Cancer Laser Hyperthermia: An Invitro-Assay	823
<i>M.E. Khosroshahi, M. Tajabadi, Sh. Bonakdar, V. Asgari</i>	
Bio Magnetic Nano Particles (BMNPs) Used for Cancer Treatment via Hyperthermia Method	827
<i>A.S. RezazadehNochehdehi, M. Sandri, A. Mohammadzadeh</i>	
Cherenkov Emission Dosimetry for Electron Beam Radiotherapy: A Monte Carlo Feasibility Study of Absolute Dose Prediction	828
<i>Y. Zlateva, I. El Naqa</i>	
Detection of Melanoma through Image Recognition and Artificial Neural Networks	832
<i>Cristofer Marín, Germán H. Alférez, Jency Córdova, Verénice González</i>	

Part VII: Surgery, Computer Aided Surgery, Minimal Invasive Interventions, Endoscopy and Image-Guided Therapy, Modelling and Simulation

A Fiducial Apparatus for 6DOF Pose Estimation of an External Echo Probe from a Single X-ray Projection: Initial Simulation Studies on Design Requirements	839
<i>C.R. Hatt, A.N. Raval, M.A. Speidel</i>	
Mechanism Design a Flexible Endoscope with USB Adaptation to Training	843
<i>F.D. Pérez, D. Lorias, R. Martínez</i>	
Comparing the Effects of Three MRI RF Sequences on Ultrasonic Motors	846
<i>P. Shokrollahi, J.M. Drake, A.A. Goldenberg</i>	
3D Quantitative Evaluation System for Integral Photography Based 3D Autostereoscopic Medical Display	850
<i>Zhencheng Fan, Sen Zhang, Yitong Weng, Guowen Chen, Hongen Liao</i>	
Assistant Laparoscopic Postural: Kinematic Behavior	854
<i>D. Lorias, A. Minor</i>	
Workspace Optimization of a Surgical Instrument for Single Port Access Surgery	858
<i>B. Blase, S. Schlegel, S. Albrecht</i>	
High-Dexterity Telemanipulation Robot for Minimally Invasive Surgery	862
<i>S. Schlegel, S. Albrecht, B. Blase</i>	

Integrated Sensors for a Single-Incision Laparoscopic Instrument	866
<i>S. Albrecht, B. Blase, S. Schlegel</i>	
A Technique for Prostate Registration by Finite Element Modeling	870
<i>J.F. Liu, F.S. Cui, Z.J. Liu, J.M. Liu</i>	
The Influence of Two Different Drug Infusion Profiles on the Pharmacodynamics Model Performance	874
<i>A.L. Ferreira, C.S. Nunes, J. Gabriel, P. Amorim</i>	
Preoperative in Silico Analysis of Atherosclerotic Calcification Vulnerability in Carotid Artery Stenting Using Finite Element Analysis by Considering Agatston Score	881
<i>S. Riyahi-Alam, U. Morbiducci, H. Katano, K. Yokoyama, S. Ali, A. Audenino, F. Molinari</i>	
Biomechanical Modeling for Foot Inversion	885
<i>Jun-chao Guo, Cheng-fei Du, Li-zhen Wang, Yu-bo Fan</i>	
Deformation Method and 3D Modeling of the Female Body to Simulate Core Biopsy Procedure	889
<i>V.P.S. Corrêa, M.T.D. Melo, V.F. Nogueira, V.H.L. Gonçalves, H.D.R. Costa, J.S.S. Melo, B.A. Rodrigues, L.M. Brasil</i>	
Effects of Band Position on Hemodynamics of Pulmonary Artery: A Numerical Study of Patient-specific Virtual Procedure	893
<i>J.L. Liu, W.M. Zhang, Q. Yan, H.F. Hong, J.F. Liu</i>	
Orthogonal IR System for Instrumental Tracking in Minimally Invasive Spine Procedures for Training Using Wiimote Technology	897
<i>J. Martínez, D. Lorias, A. Minor</i>	
Part VIII: Biosensor, Nanotechnology, Biomems and Biophotonics	
Magnetic Resonance Nanotheranostics of Guerin's Carcinoma	903
<i>V.E. Orel, T. Mitrelias, M. Tselepi, E.I. Kruchkov, A.Y. Rykhalskiy, A.V. Romanov</i>	
Nanoparticle-aided Radiotherapy for Retinoblastoma and Choroidal Melanoma	907
<i>Yucel Altundal, Erno Sajo, G. Mike Makrigiorgos, Ross I. Berbeco, Wilfred Ngwa</i>	
Nanotechnology Applied in Drug Delivery	911
<i>G. Barbosa, P.A.F. Silva, G.V.S. Luz, L.M. Brasil</i>	
Gas Sensors with ZnO Quantum Dots Synthesized by Sol-Gel Methods	915
<i>G.V.S. Luz, P.H.O. Nogueira, E.C. Araújo, L.C. Araújo, P. Hidalgo, L.M. Brasil</i>	
Next Generation transdermal Drug Delivery – An Electrochemical Approach to pH Manipulation for Controlled Release within Smart Patch Technologies	919
<i>Ashleigh Anderson, James Davis</i>	
Externally Applied Pressure on the Skin Electrode Impedance	923
<i>Bahareh Taji, Adrian D.C. Chan, Shervin Shirmohammadi</i>	

Measurement of the Received Power in a Realistic Intrabody Communication Scenario	924
<i>Lučev Vasić, I. Krois, M. Cifrek</i>	
An Approach Based on Fuzzy Clustering and an Original Validation Index Improves Single Channel Ionic Current Evaluation	928
<i>G. Rauch, M. Giacomini</i>	
A Computational Method for Clustering Evaluation in Toxic Activity Study	933
<i>M. Giacomini, A. Bisio, S. Robaldo, B. Giannini, G. Rauch</i>	
Study of the Sensibility of Induced Heat Effects in Edible Oil Measured by Interferometric Techniques	938
<i>J. Espinosa-Barrios, F. Corella- Jiménez, Corella Jiménez, A. Ávila, A. Guillen-Peralta, G. Romo-Cárdenas, A. Piña-Barrera</i>	

Volume 2

Part IX: Biosignal Processing

Sensitivity of Heart Rate Variability Indices for Artificially Simulated Data	945
<i>A.A. Fedotov, A.S. Akulova</i>	
Desaturation Event Characteristics and Mortality Risk in Severe Sleep Apnea	950
<i>A. Kulkas, A. Muraja-Murro, T. Leppänen, P. Tiihonen, E. Mervaala, J. Töyräs</i>	
Upper-Limb Force Modeling using Rotated Ensembles with Fast Orthogonal Search on High-Density Electromyography	954
<i>G. Johns, E.L. Morin, K. Hashtrudi-Zaad</i>	
Characteristic Analysis and Modeling for Signals of Auditory Propagation Pathway	958
<i>Qin Gong, Xiaolin Li, Tao Zhang, Xi Chen</i>	
A Mother Wavelet Selection Algorithm for Respiratory Rate Estimation from Photoplethysmogram	962
<i>Guo Dan, Zhijian Li, Huijung Ding</i>	
Static Posturography of Elderly Fallers and Non-Fallers with Eyes Open and Closed	966
<i>J.D. Howcroft, J. Kofman, E.D. Lemaire, W.E. McIlroy</i>	
Comparison of the Three Filter Algorithms for Detection of Electrically-Evoked Short-Latency Responses in Retinal Ganglion Cells	970
<i>M.H. Choi, J.Y. Ahn, S.J. Oh, K.H. Pi, Y. Chee, H.H. Ko, D.I. Cho, Y.S. Goo, K. Koo</i>	
Mathematical Assessment of Variability in Respiratory Airflow Patterns	974
<i>S. Raman, C. Druzgalski</i>	
An Evaluation of Arterial Stiffness Index in Relation to the State of the Cardiovascular System	978
<i>J. Havlik, J. David, J. Dvorak, L. Lhotska</i>	
An Evaluation of Performance for an Independent SSVEP-BCI Based on Compressive Sensing System	982
<i>R.G. Tello, J.K. Pant, S.M. Müller, S. Krishnan, T.F. Bastos-Filho</i>	
Quantifying Blood-Oxygen Saturation Measurement Error in Motion Contaminated Pulse Oximetry Signals	986
<i>G.W.J. Clarke, A.D.C. Chan, A. Adler</i>	

Classification of Responders Versus Non-Responders to tDCS by Analyzing Voltage between Anode and Cathode during Treatment Session	990
<i>I. Nejadgholi, T. Davidson, C. Blais, F. Tremblay, M. Bolic</i>	
An Exploration of the Erector Spinae Muscle for Knee Exoskeleton Control	994
<i>D. Delisle-Rodriguez, A.C. Villa-Parra, T. Bastos, A. Frizzera-Neto, A. López-Delis</i>	
Evaluation the Accuracy of Oscillometric Blood Pressure Measurement According to the AAMI SP10	998
<i>H.Y. Xiang, Y.Y. Liu, T. Guo, Y.F. Qin, M.S. Yu</i>	
A Fully Unsupervised Clustering on Adaptively Segmented Long-term EEG Data	1002
<i>V. Gerla, E.A. Saifutdinova, V. Kremen, M. Huptych, V. Krajca, L. Lhotska</i>	
A Hybrid Model for Diagnosing Sever Aortic Stenosis in Asymptomatic Patients Using Phonocardiogram	1006
<i>Arash Gharehbaghi, Per Ask, Eva Nylander, Birgitta Janerot-Sjoberg, Inger Ekman, Maria Lindén, Ankica Babic</i>	
An Intelligent Method for Discrimination between Aortic and Pulmonary Stenosis Using Phonocardiogram	1010
<i>Arash Gharehbaghi, Amir A. Sepehri, Armen Kocharian, Maria Lindén</i>	
Automatic Detection of Low-Quality Seismocardiogram Cycles Using the Outlier Approach	1014
<i>V. Zakeri, F. Khosrow-Khavar, K. Tavakolian</i>	
Adaptive Filter for Eliminating Baseline Wander of Pulse Wave Signals	1018
<i>A.A. Fedotov, A.S. Akulova</i>	
MRS Data Deconvolution through KBDM with Multiple Signal Truncation and Clustering: Circumventing Noise Effects	1022
<i>D.M.D.D. da Silva, Y. Vaz, F.F. Paiva</i>	
Quantification of Wavelet Band Metrics for Assessing Heart Rate Variability	1026
<i>M.P. Wachowiak, D.C. Hay, M.J. Johnson</i>	
Effect of Coffee on EEG Spectral Assymetry	1030
<i>M. Saifudinova, M. Bachmann, J. Lass, H. Hinrikus</i>	
Spectral Analysis of Respiratory and Cardiac Signals Using Doppler Radar	1034
<i>P. Tworzydło, A.D.C. Chan</i>	
PEMF Effects on Chondrocyte Cellularity and Gene Expression of the Rat Distal Femoral Metaphyseal Articular Cartilage	1039
<i>F. Sotelo-Barroso, K.S. Vera-Delgado, C. Caudillo-Cisneros, E.M. Castro-Rodríguez, S. Márquez-Gamiño</i>	
Improved T-wave Alternans Detection in ECG Signals	1043
<i>Guangyi Chen, Sridhar Krishnan, Vijay S. Chauhan</i>	
Electrical Left Atrial Conduction Delay with Focused Transesophageal Electrocardiography in Cardiac Resynchronization Therapy	1048
<i>M. Heinke, H. Kühnert, T. Heinke, J. Tumampos, G. Dannberg</i>	
Electrical Interatrial to Interventricular Conduction Delay Ratio with Focused Transesophageal Electrocardiography in Cardiac Resynchronization Therapy	1052
<i>M. Heinke, G. Dannberg, T. Heinke, B. Ismer, T. Haber, J. Tumampos, H. Kühnert</i>	

Efficacy of DWT Denoising in the Removal of Power Line interference and the Effect on Morphological Distortion of Underlying Atrial Fibrillatory Waves in AF-ECG	1056
<i>J. Goodfellow, O.J. Escalona, V. Kodoth, G. Manoharan</i>	
A Mobile Terminal to Follow-up the Evolution of Chronic Diseases	1060
<i>Hector Torres, Rene Gonzalez, Daniel Campillo, Eyglis Ledesma</i>	
The Algorithm for the Diagnosis of Ventricular Tachycardias from Electrocardiogram	1064
<i>M. Holub, M. Šrutová, V. Křemen, L. Lhotská</i>	
Acute Mental Stress Detection via Ultra-short Term HRV Analysis	1068
<i>R. Castaldo, P. Melillo, L. Pecchia</i>	
Classification of Abdominal Fetal Electrocardiogram Recordings Using Karhunen-Loève Decomposition	1072
<i>P.A. Warrick, M. Altuve</i>	
Signal Quality Indices for Ambulatory Electrocardiograms Used in Myocardial Ischemia Monitoring	1076
<i>M. Abdelazez, P.X. Quesnel, A.D.C. Chan, H. Yang</i>	
Respiratory Parameters have Different Patterns in Imposed-Inspiration and Imposed-Expiration within a Closed Pneumatic Circuit in Rats	1080
<i>F.G. Aoki, M.H. Valenga, T.G. Rodrigues, P.F.G. Cardoso, R. Pazetti, H.T. Moriya</i>	
Photoacoustic Speckle and Spectral Analysis of Vasculature Trees	1084
<i>M.N. Fadhel, M.C. Kolios</i>	
Relationship between the Tuning Characteristics of Stimulus Frequency Otoacoustic Emissions and Behavioral Tests at Moderate Levels	1088
<i>Yao Wang, Qin Gong, Tao Zhang</i>	
Mirror Movements in Writer's Cramp—A Study with Multi-channel EMG	1092
<i>V. Rama Raju, K.M. Rukmini, R. Borgohain, A.K. Meena, S.A. Jabeen</i>	
EMG—EMG Coherence in Multisite Writer's Cramp Waveforms—A Study with Advanced Multi-channel EMG System	1096
<i>V. Rama Raju, K.M. Rukmini, R. Borgohain, N.V. Thakor</i>	
Part X: Rehabilitation Medicine, Sports Medicine, Rehabilitation Engineering and Prosthetics	
Neuromuscular Reconnection Methodology By Cap Sense Absorption And Diffusion Signal	1103
<i>Ricardo Jaramillo Diaz, Hermann Dávila Torres, Luis Javier Martinez</i>	
Statistical Evaluation of Objectivisation of Rehabilitation Process	1107
<i>I. Novotna, M. Tomanova, L. Lhotska</i>	
A Validation Test of a Simple Method of Stride Length Measurement Only with Inertial Sensors and a Preliminary Test in FES-assisted Hemiplegic Gait	1111
<i>T. Watanabe, T. Miyazawa</i>	
A Novel Treadmill Body Weight Support System Using Pneumatic Artificial Muscle Actuators: A Comparison between Active Body Weight Support System and Counter Weight System	1115
<i>Tran Van Thuc, Flavio Pratico, Shin-ichiroh Yamamoto</i>	

Movement Training and Assessment with 3D Virtual Reality for Parkinson's Disease Patient	1120
<i>Chien-An Chen, Hsiao-Yu Lee, Zong-Syuan Huang, Chao-Chen Lo, Jia-Jin J. Chen, Yu-Lin Wang, Kao-Chang Lin</i>	
Arm Angle Detection in Egocentric Video of Upper Extremity Tasks	1124
<i>J. Likitlersuang, J. Zariffa</i>	
A Serious Game for Training and Evaluating the Balance of Hemiparetic Stroke Patients	1128
<i>F. Noveletto, P. Bertemes-Filho, M.S. Hounsell, A.V. Soares</i>	
Quantitative Measurement of Subtalar Joint Passive Stiffness in Children with Cerebral Palsy	1132
<i>Wei Chen, Fang Pu, Yang Yang, Jie Yao, Li-zhen Wang, Yu-bo Fan</i>	
fNIRS-Based Analysis of Brain Activation with Knee Extension Induced by Functional Electrical Stimulation	1137
<i>Misato Ohdaira, Tomoko Kamisawa, Soichiro Morishita, Yinlai Jiang, Osamu Yamamura, Hiroshi Yokoi</i>	
External Modulation of Electrical Stimulated Spinal Reflexes - A Control Modality for Human Lumbosacral Networks in Injury Induced Disconnection from Brain Control	1142
<i>W. Mayr, M. Krenn, M.R. Dimitrijevic</i>	
Validating a Solid-Static Single-Armed Male Prototype Tasked to Produce Dynamic Movement from the Shoulder Through the Preparation Phase	1146
<i>A.M. Gal, A.D.C. Chan, D.C. Hay</i>	
Motor Control Assessment Using Leap Motion: Filtering Methods and Performance in Indoor and Outdoor Environments	1150
<i>J.J. Kim, D.A. Gonzalez, A. Mintz, E.A. Roy, J.Y. Tung</i>	
Prefrontal Brain Activity of Goal Keeper when Penalty Kick	1155
<i>T. Kuriyama, M. Asano, M. Nambu, M. Yoshida</i>	
Human Knee Simulation Using CMAC ANN	1159
<i>R.A. Lima, V.R.F.S. Marães, J.P. Martins, L.M. Brasil</i>	
Testing a Mobile Robot Toy for Children with Disabilities	1163
<i>A. Ríos Rincon, D.A. Quiroga Torres, J. Castellanos, M.F. Gómez Medina, A. Miguel Cruz, W.R. Rodríguez</i>	
 Part XI: Neuroengineering, Neural Systems	
Accelerating Neurite Outgrowth through Electric Field Manipulation	1169
<i>M.T. Purdy, P. Wijdenes, W. Zaidi, N.I. Syed, C. Dalton</i>	
Development of a Planar Microelectrode Array Offering Long-term, High-resolution Neuronal Recordings	1173
<i>P. Wijdenes, C. Dalton, R. Armstrong, W. Zaidi, N.I. Syed</i>	
Robotic Wheelchair Commanded by People with Disabilities Using Low/High-Frequency SSVEP-Based BCI	1177
<i>S.M.T. Müller, P.F. Diez, T.F. Bastos-Filho, M. Sarcinelli-Filho, V. Mut, E. Laciár, E. Avila</i>	
Design and Construction of a Brain-Computer Interface for Applications in Neuro-robotics	1181
<i>L.F.M. Alma Rosa Méndez Gordillo, M.C. Miguel Villagómez Galindo, Marco Antonio Espinosa Medina</i>	
Comparison of Classification Methods for EEG-Based Emotion Recognition	1184
<i>Wei-Long Zheng, Roberto Santana, Bao-Liang Lu</i>	

Cross-subject and Cross-gender Emotion Classification from EEG	1188
<i>Jia-Yi Zhu, Wei-Long Zheng, Bao-Liang Lu</i>	
A Brain Computer Interface (BCI) Based on Intermittent Photic-Stimulation Using Multiple Coherence to Command Detection	1192
<i>A. D’Affonsêca Netto, A.M.F.L. Miranda de Sá, A.F.C. Infantosi</i>	
Comparison of Three Deep Brain Stimulation Lead Designs under Voltage and Current Modes	1196
<i>F. Alonso, M. Latorre, K. Wårdell</i>	
Stimulations to Basal Ganglia and the Efficiency of Microminiaturized Electrode Recording (MER) to Quantify STN Neurons with Deep Brain Stimulator (DBS)—The Lead Point in Parkinson Diseased Conditions	1200
<i>V Rama Raju, K.M. Rukmini, R. Borgohain, A. Praveen Anitha, S.F. Jabeen, A.K. Meena, N.V. Thakor</i>	
The Role of Microelectrode Recording (MER) in STN DBS Electrode Implantation	1204
<i>V. Rama Raju, K.M. Rukmini, R. Borgohain, P. Ankathi Anitha, S.F. Jabeen, A.K. Meena</i>	
A 16-bit High-Voltage Digital Charge-Control Electrical Stimulator	1208
<i>Soheil Mottaghi, Richard Pinnell, Ulrich G. Hofmann</i>	
Beta/Theta Neurofeedback Training Effects in Physical Balance of Healthy People	1213
<i>Wenya Nan, Xiaoting Qu, Limin Yang, Feng Wan, Yong Hu, Pedro Mou, Pui-In Mak, Peng Un Mak, Mang I. Vai, Agostinho Rosa</i>	
Potential Benefits in Comparing the Neural Control Networks Studies Between the Oculomotor and Cardiac Pacing Systems	1217
<i>M. Cheng, A. Ghahari</i>	
Assessment of Bilateral SSEP Signals Enhancement Following Transectional Spinal Cord Injury Using Linear Modeling	1219
<i>Hasan Mir, Hasan Al-Nashash, Thow Xin Yuan, Jukka Kortelainen, Chua Soo Min, Janani Manivannan, A. Astrid, Angelo H. All</i>	
A New Dynamic Virtual Stimulation Protocol to Evoke M-VEP and Linear Vection during Orthostatic Posture Control	1220
<i>P.J.G. Da-Silva, M. Cagy, A.F.C. Infantosi</i>	
Contrast between Spectral and Connectivity Features for Electroencephalography Based Authentication	1224
<i>C. Han, S.K. Kim, H.N. Yoon, W.K. Lee, C.S. Park, K.K. Kim, K.S. Park</i>	
Establishment of Real Human Head Conductivity Model with Ventricular Structure Used in TMS Simulation Study	1228
<i>C. Zhao, H.H. Cheng, Z.P. Liu, T. Yin</i>	
Study on Electric Field in Real Head Model Induced by H-coil	1233
<i>H. Cheng, C. Zhao, Z. Liu, T. Yin</i>	
Superparamagnetic Nanoparticles for Epilepsy Detection	1237
<i>Maysam Z. Pedram, Amir Shamloo, Aria Alasty, Ebrahim Ghafar-Zadeh</i>	
Objective Evaluation of Likes and Dislikes by Prefrontal Blood Flows	1241
<i>M. Asano, M. Nambu, M. Yoshida, Y. Kawahara</i>	

SCHIZOPHRENIA: Interaction between Factors	1245
<i>Voichcoski B.M., Machado V. N.</i>	
How Mental Strategy Affects Beta/Theta Neurofeedback Training	1250
<i>X.T. Qu, Q. Tang, L.M. Yang, W.Y. Nan, Janir Nuno da Cruz, Feng Wan, P.A. Mou, P.I. Mak, P.U. Mak, M.I. Vai, Y. Hu, A.C. Rosa</i>	
Part XII: Medical Devices	
Dielectric Properties of Urine for Diabetes Mellitus and Chronic Kidney Disease between 0.2 GHz and 50 GHz	1257
<i>H.N. Ting, P.S. Mun, T.A. Ong, Y.B. Chong, K.H. Ng</i>	
Intraoperative Bioelectrical Impedance Measurement for Assisting Segmental Renal Artery Clamping Partial Nephrectomy	1261
<i>Jun Du, Yu Dai, Qing Yang, Jianxun Zhang</i>	
Developing a pH Responsive Mesh as a Smart Skin Wafer in Ostomy Appliances	1265
<i>Anna McLister, James Davis</i>	
A Low Cost Pulsed Wave Doppler Ultrasound System on Field Programmable Gate Arrays for Vascular Studies	1269
<i>Arnaiz Isabel</i>	
Renal Volume Estimation by Ultrasound Parallel Scanning for Polycystic Kidney Disease Follow-Up	1273
<i>F. Simini, M. Sitrin, E. Arrua, D. Tobal, L. Urruty, O. Noboa</i>	
Pulse Wave Velocity as a Function of Cuff Pressure – Extra Information About the Cardiovascular System	1279
<i>Á. Jobbágy, P. Nagy</i>	
Effectiveness of Ozone-Liquid Mass Transfer Aiming Ozone Therapy	1283
<i>H.C. Carvalho, M.S. Melo, C.J. Lima, L.P. Alves, L. Silveira Jr., R.A. Zângaro</i>	
Vertebral Metrics – Development of a Third and Improved Prototype	1286
<i>A. Gabriel, C. Quaresma, M.F. Secca, P. Vieira</i>	
A Study of Pressure-Volume Characteristics of the Cuff for Hemodynamic Parameters Measurement	1290
<i>J. Dvorak, M. Tucek, J. Havlik</i>	
Development of a Smart Needle Integrated with a Micro-structured Impedance Sensor for the Detection of Breast Cancer	1293
<i>N.T.P. Savage, B.D. O'Donnell, M.J. O'Sullivan, E.J. Moore</i>	
Can Removal of Middle Molecular Uremic Retention Solutes be Estimated by UV-absorbance Measurements in Spent Dialysate?	1297
<i>K. Lauri, M. Luman, J. Holmar, R. Tomson, S. Kalle, J. Arund, F. Uhlin, I. Fridolin</i>	
Design and Technical Evaluation of an Implantable Passive Sensor for Minimally Invasive Wireless Intracranial Pressure Monitoring	1301
<i>Mohammad H. Behfar, Elham Moradi, Toni Björninen, Lauri Sydänheimo, Leena Ukkonen</i>	
Automation of a Dispersive Raman Spectrometer Using LabVIEW Aiming In Vivo Diagnosis of Skin Cancer	1305
<i>L. Silveira Jr., G.M. Schettino, M.T.T. Pacheco, R.A. Zângaro</i>	

Microfluorimetry System Instrumentation for Ca ²⁺ -Associated Fluorescence Imaging of Cardiomyocytes in Response to High Electric Fields	1309
<i>M. Zoccoler, P.X. de Oliveira</i>	
Development of a Low Cost Spectrometer for Studies of Diffuse Reflectance with Dermatological Science and Applications	1313
<i>S. Domínguez-Domínguez, R. Domínguez-Domínguez, G. Romo-Cárdenas</i>	
Correctness of Bioimpedance Data for Body Composition Obtained by BIA Approach in Various External Conditions	1317
<i>Jan Hlubik, Jan Kříž, Lenka Lhotska</i>	
A Practical Device to Warn on Impending Syncopal Episodes	1321
<i>M. Cheng, V. Thiruganasambandamoorthy, H.R. Dajani</i>	
ONCOMETER	1322
<i>Priyajit Ghosh</i>	
Development of Personalized Tourniquet Systems Using a New Technique for Measuring Limb Occlusion Pressure	1325
<i>J.A. McEwen, B.A. Masri, B. Day, A.S. Younger</i>	
Denoising RF Defibrillator Waveforms for Intracardiac Atrial Substrate Impedance Characterisation Using Digital Filtering Techniques	1329
<i>O.J. Escalona, P.R. Walsh, A.S. Rababah, V. Kodoth, G. Manoharan</i>	
Photopolymerization Device for Minimally Invasive Implants: Application to Nucleus Pulposus Replacement	1333
<i>A. Schmocker, A. Khoushabi, P.E. Bourban, D.P. Pioletti, C. Moser</i>	
A CdZnTe-Based Automated Blood Counter for Quantitative Molecular Imaging	1338
<i>R. Espagnet, J.-P. Martin, L.-A. Hamel, P. Després</i>	
Quality Management Systems for Medical Devices in the Production of Hospital Beds	1343
<i>V. Prindis, I. Jurickova</i>	
Design and Implementation of the Software for Multi-parameter Patient's Monitor	1347
<i>M. Cañizares, A.R. Rodríguez, G. Rodríguez, D. Jiménez, H. Torres, D.A. Romero, M. Portieles, M. Gómez, R.I. González</i>	
High-Reliability Nerve Stimulator for Aiding Regional Anesthesia Procedures	1351
<i>C.A. Ferri, A.A.F. Quevedo</i>	
Prototype Development Generating Vacuum for Treating Chronic Wounds Negative Pressure Level Laboratory	1355
<i>E. Vázquez-Gordillo, R. De la Rocha, G. Romo-Cárdenas</i>	
A Method to Determine the Variation of Irradiance in Bilirubin Lamps as Function of the Time of Use	1359
<i>G.M. Salum, A.N. Di Teodoro Cotua, J. Salerno, E. Marino, R.D. Piacentini</i>	
Developing Smart Bandage Materials for the Management of Chronic Wounds	1363
<i>J. McHugh, K. McCreddie, J. Davis</i>	
HTA for Medical Devices: Multiple-Criteria Decision Making as an Outcome Evaluation Tool	1367
<i>J. Rosina, V. Rogalewicz, I. Ivlev, I. Juříčková, G. Donin, J. Vacek, R. Otawová, P. Kneppo</i>	

Value of Information Analysis for Use in Health Technology Assessment	1371
<i>J. Havlik, I. Jurickova</i>	
Device Trial to Improve Blood Flow Rate with Controlled Pressure for Blood Flow at Venous Side in Single Needle Dialysis	1375
<i>Yasuyuki Miwa, Manabu Kawabe, Yoshihisa Yamashita, Takashi Kano</i>	
High Output Impedance Current-Conveyor Oscillator for Electrical Bioimpedance Applications	1379
<i>P. Bertemes-Filho, V.C. Vincence, D. Križaj</i>	
Electromagnetic High-Hydrous Gel Phantom at a Low-Frequency Band-Improvement in the Electrical Characteristics by Using a Carbon Microcoil and Investigation of Its Mechanism	1383
<i>Takahiko Yamamoto, Kohji Koshiji</i>	
Part XIII: Informatics in Health Care and Public Health	
User Centered Design to Incorporate Predictive Models for Type 2 Diabetes Screening and Management into Professional Decision Support Tools: Preliminary Results	1389
<i>G. Fico, L. Hernandez, J. Cancela, M.T. Arredondo</i>	
An Artifact Detection Framework for Clinical Decision Support Systems	1393
<i>Shermeen Nizami, James R. Green, Carolyn McGregor</i>	
Quantifying Bipolar Disorder for Technology-Assisted Self-Management	1397
<i>J.D. Amor, M. Svobodova, I. Jones, C.J. James</i>	
Differential Feature Space in Mean Shift Clustering for Automated Melanoma Assessment	1401
<i>J. Eslava, C. Druzgalski</i>	
Developing an Appropriate and Affordable Expert System for Medical Diagnosis (ESMD) in Developing Countries	1405
<i>K.I. Nkuma-Udah, G.A. Chukwudebe, J. Ahaiwe, K. Ejeta, G.I. Ndubuka</i>	
From Smart Phones to Smart Health	1409
<i>M. Pin, D. Zelaya, J. Cruz, R. Alvarado, R. Silva</i>	
Hippocratic Protocol Design to Improve Security and Privacy in Healthcare Applications for NFC Smartphone	1412
<i>J. Pirrone, M. Huerta</i>	
Becoming of Ubiquitous Sensors for Ubiquitous Healthcare	1416
<i>S. Dadunashvili</i>	
A Simple Device Producing Electrolyzed Water for Home Care	1419
<i>K. Umimoto, N. Morimoto, A. Kamada, S. Nagata, J. Yanagida</i>	
Monitoring Information System of Aedes Aegypti Reproduction	1423
<i>H.S. Morais, O.S. Santos, M.A. Rocha, T.C.S. Almeida, L.M. Brasil, G.D. Amvame-Nze</i>	
Evaluation of the Impact in the Physical Condition of School Age Children Exposed to an Intervention of Exergaming in Montemorelos Mexico	1427
<i>A. Guillen-Peralta, G. Romo-Cardenas, G. Avilés-Rodríguez, R. Rodríguez-Antonio</i>	

A Telemedicine System to follow-up the Evolution of Chronic Diseases in the Community	1431
<i>R.I. Gonzalez-Fernandez, M.L. Mulet-Cartaya, J.D. Lopez-Cardona, A. Lopez-Reyes, R. Lopez-Rodriguez, R. Lopez-Creagh, E. Ledesma-Valdes</i>	

Extracting Intention from Web Queries Application in eHealth Personalization	1435
<i>G. Drosatos, A. Arampatzis, E. Kaldoudi</i>	

Part XIV: Information Technologies in Healthcare Delivery and Management

An Algorithm Based on Voice Description of Meal for Insulin Dose Calculation to Compensate Food Intake	1441
<i>P. Foltynski, P. Ladyzynski, E. Pankowska, K. Mazurczak, K. Migalska-Musial</i>	

Diagnosis of the corporal movement in Parkinson's Disease Using Kinect Sensors	1445
<i>R. Torres, M. Huerta, R. Clotet, R. González, G. Sagbay, M. Erazo, J. Pirrone</i>	

Intelligent System for Identification of Patients in Healthcare	1449
<i>A. Vasquez, M. Huerta, R. Clotet, R. González, G. Sagbay, D. Rivas, J. Pirrone</i>	

Wireless Equipment Localization for Medical Environments	1453
<i>D. Laqua, P. Fritzsche, S. Niemöller, P. Husar, V. Busch, M. Naß, J. Pospiech, K. Saleh</i>	

A Mobile Monitoring Tool for the Automatic Activity Recognition and its Application for Parkinson's Disease Rehabilitation	1457
<i>J. Cancela, M. Pastorino, E. Moreno, M.T. Arredondo Waldmeyer</i>	

Home-call - An Enhanced Fall Detection System based on Accelerometer and Optical Sensors Applicable in Domestic Environment	1461
<i>D. Wohlrab, M. Heß, A. Apitzsch, M. Langklotz, A. Schwarzenberger, S. Bilda, H. Schulz, G. Hirtz, J. Mehner</i>	

Smartwatch App as the Chest Compression Depth Feedback Device	1465
<i>Y. Jeong, Y. Chee, Y. Song, K. Koo</i>	

A System to Support Regional Screening Programs to Identify School-age Children at Risk of Neurodevelopmental Disorders	1469
<i>E. Santos-Febles, V. Reigosa-Crespo, K. García-Liashenko, A. Echemendía, E. Plasencia, G. Pujols, A. Alvarez, E. Eimil</i>	

Part XV: Bioinformatics

Updated Free Energy Parameters Increase MicroRNA Prediction Performance	1477
<i>R.J. Peace, J.R. Green</i>	

Comparative Analysis of Co-Expression Networks Reveals Molecular Changes during the Cancer Progression	1481
<i>P. Khosravi, V.H. Gazestani, B. Law, G.D. Bader, M. Sadeghi</i>	

Fuzzy-State Machine for Triage Priority Classifier in Emergency Room	1488
<i>Emmanuel S. Sánchez Velarde, Alejandro A. Sotelo-de Ávila, Itzamná O. Rico-Asención, Nayely R-Budar Alemán, Rodrigo-Sánchez González, María G. Ramírez-Sotelo, Agustín I. Cabrera-Llanos</i>	

A Rapid Learning Approach for the Knowledge Modeling of Radiation Therapy Plan	1492
<i>L. Yuan, Y. Ge, F. Yin, Q.J. Wu</i>	

Part XVI: Clinical Engineering, Clinical Physics, and Patient Safety

Project Management for Clinical Engineering - Considerations in the Evaluation and Acquisition of Medical Equipment for Health Services in Brazil	1497
<i>C.S. Alves, M.M.F. Gomes, L.M. Brasil</i>	
Creation of a System for the Coding of Medical Devices	1501
<i>M. Dezi, A. Luschi, E. Iadanza</i>	
Device Reconditioning Service for Home-Based Assistance How to Choose the Right Approach	1504
<i>Roberta Chiarizia, Roberto Miniati, Ernesto Iadanza</i>	
Using Heuristic Analysis to Support Usability Evaluation of a Low Risk Medical Device under Development Process	1508
<i>R.A.R. Custódio, A.P.S.S. Almeida, J.E. Correa, R.M.A. Almeida, C.H.P. Mello, E.L. Muller Júnior</i>	
Smart Pump User Interface Evaluation	1512
<i>C.A.B. Vivianie, S.J. Calil</i>	
Applying Heuristic Evaluation on Medical Devices User Manuals	1515
<i>F.O. Andrade, L.N. Nascimento, G.A. Wood, S.J. Calil</i>	
Management of Electromagnetic Interferences in Healthcare Facilities - A Review	1519
<i>Gnahoua Zoabli, A. Nabilath Akimey</i>	
Technological Surveillance and Integrity Monitoring of Infusion Systems	1525
<i>D. Grosse-Wentrup, U.M. Hoelscher</i>	
Anthropomorphic Phantom of the Pancreas for Scintillation Camera Tests	1528
<i>H.C.M. Silva, F.C.L. Ferreira, L.M. Brasil, G.V.S. Luz, L.X. Cardoso</i>	
Hospital Mode Design in Smartphones and Tablets for Wireless Security in Healthcare Facilities	1532
<i>Gnahoua Zoabli, A. Nabilath Akimey</i>	
Approach to the Management of Infusion Systems in Hospitals	1535
<i>Roberta Chiarizia, Roberto Miniati, Ernesto Iadanza</i>	
Applying an Evidence-based Approach to Managing Alarm Safety: A University Health Network Case Study	1538
<i>A. Li, D. Gretzinger</i>	
Practice of HB-HTA on the Study of HIFU Technology for the Treatment of Prostate Cancer and Uterine Fibroma	1542
<i>R. Miniati, B. Latella, F. Frosini, P. Avezzano, E. Iadanza, F. Dori</i>	
Novel Medical Device Procurement Tracking Approach	1546
<i>G. Donin, I. Ivlev, S. Jeřábková, J. Vacek, P. Kneppo</i>	
Design of a Remote use ECG with an Optical Communication System (FSO) for Telemedicine Applications	1550
<i>Y. Vazquez-Lopez, R. Rodriguez-Aleman, G. Romo-Cardenas</i>	
A Simulation Based Model for Planning Operating Theater Activity in Complex Hospitals: Case Study in Orthopedics	1554
<i>F. Frosini, R. Miniati, P. Avezzano, F. Dori, D. Cocchi, E. Iadanza, S. Belli, M.T. Mechi, V. Ceccherini, A. Belardinelli</i>	

Study on Medical Equipment Location Systems that Use RFID Technology	1558
<i>Manabu Kawabe, Yasuyuki Miwa, Takashi Kano</i>	
Multi-Criteria Decision Analysis to Redesign an Italian Clinical Engineering Service under Specific Needs and Regulation Requirements	1562
<i>I. Lasorsa, G. Abis, B. Podda, A. Accardo</i>	
Reliability Indicators in the Medical Equipment Management	1566
<i>R.S. Camila, C.A. William, F. Renan, G. Renato</i>	
A Healthcare Facilities Qualitative and Multivariate Quantitative Assessment Methodology for Mongolia	1571
<i>C.I. Meirovich, A. Bold</i>	
A Basic Study on the Measurement of Electromagnetic Fields in a New University Hospital Building Before and After the Hospital Opened	1575
<i>Kai Ishida, Ren Hosokawa, Tetsuo Endo, Tomomi Fujioka, Tetsushi Fujisaki, Ryoji Yoshino, Minoru Hirose</i>	
Establishment of Radiation Qualities for Radiodiagnostics in LCR/UERJ According to IEC 61267 and TRS 457	1578
<i>D.B. da Silva, L.A.G. Magalhaes, J.J.S. Estrada, E.J. Pires, M.G. David, N. Ferreira, C. Alves, C.E. de Almeida</i>	
The Critical Evaluation of AV Control Leatures in Modern Pacemakers and Cardioverters	1583
<i>K. Peczalski, T. Palko</i>	
Assisted Reproductive Technology Center Design with Quality Function Deployment Approach	1587
<i>A. Luschi, M. Monti, E. Iadanza</i>	
Study of the Sensitivity on the Measurement of the Prevalence of Total Cholesterol in Blood Serum by Interferometric Techniques	1591
<i>B. Hernandez-Zacarias, A.W. Muñoz-Arpaiz, G. Romo-Cardenas, A. Guillen-Peralta, J. Alvarez-Arana, I. Chable-Hernández</i>	
Analysis and Experimentation of Plantar Foot Segmentation from Thermographic Digital Images for Preventive Diagnosis of Diabetic Foot	1595
<i>Vilcahuaman Luis, Davila Alex, Pandzic Yahir, Rosado Carolina, Alpiste Marko</i>	
Part XVII: Educational and Professional Activities	
Medical Physics in Indonesia: Current Status and Plans	1601
<i>D.S. Soejoko, S.A. Pawiro, L.E. Lubis</i>	
The Medical Physics M.Sc. Program at the National University of Mexico: Results and Lessons Learned After 100+ Graduates	1604
<i>Maria-Ester Brandan</i>	
matRad - A Multi-modality Open Source 3D Treatment Planning Toolkit	1608
<i>E. Cisternas, A. Mairani, P. Ziegenhein, O. Jäkel, M. Bangert</i>	
Biomedical Engineering Education in Peru in 2015: A Unique and Innovative Collaboration in Latin America	1612
<i>R. Rivas, L. Vilcahuamán, M. Cieza, T. Clark, H.F. Voigt</i>	
Academic Real Time Digital Medical Image Processing Environment	1616
<i>R.S. Ribeiro, R.B. Venancio, A.C. Patrocínio</i>	

Detection of Eye Movement: Possibility How to Control World	1620
<i>L. Peter, I. Neprasova, M. Cerny</i>	
"Rehabilitation Engineering: Designing for Ability" - A Summer Outreach Course for Attracting Talented High School Students to the Rehabilitation Engineering Field	1624
<i>V. Komisar, E.C. King, E. Moore, S. Hassan, A. Marquis, J. Chee, R.H. Wang, S. Mathur, T. Dutta, C. Marquez-Chin</i>	
The Potential Role of IFMBE in Improving the State of Medical Equipment in Developing Countries	1628
<i>A. Worm, A.C. Linnenbank</i>	
A Discipline about Human Factors Engineering and Usability Applied to Medical Devices for under Graduation Courses Using Active Learning Techniques	1631
<i>R.A.R. Custódio, A.P.S.S. Almeida, R.M.A. Almeida, J.A. Ferreira Filho, A.C.B. Ramos</i>	
The Medical Equipment Management Inside the Accreditation Process: A Comparison with Brazilian Accredited Hospitals	1635
<i>J.E. Corrêa, R.M.A. Almeida, J.B. Turrioni</i>	
Oh Dear Medical Physicist and Biomedical Engineer, Why it is Difficult to Pioneer Your Specialist Career?	1639
<i>M. Medvedec</i>	
Biomedical Engineering in Nigeria: A Developmental Overview	1643
<i>K.I. Nkuma-Udah, E.E.C. Agoha, K. Ejeta, G.I. Ndubuka</i>	
An Experience on the Dosimetry of HDR Brachytherapy Treatment Planning of Cervical Carcinoma at BPKM Cancer Hospital, Nepal	1649
<i>Surendra B. Chand, P.P. Chaurasia, M.P. Adhikary, A.K. Jha</i>	
Medical Physics Residency Program in Developing Countries: Lessons, Challenges and Solutions Learned from a Regional Pilot Training Program	1652
<i>S.J. Wadi-Ramahi, W. Al-Najjar, B.M. Moftah</i>	
Assistive Technologies in Biomedical Engineering Education	1656
<i>L. Lhotská, T. Welzer</i>	
Develop of a Mixed, Haptic and Virtual System to Simulate Radiographic Images	1660
<i>G.E. Avendaño, P. Pizarro</i>	
Promoting the Public Image of Medical Physicists and Biomedical/clinical Engineers	1664
<i>M. Cheng</i>	
Part XVIII: Gender, Science and Technology	
Is there a 'Leaky Pipeline' for Women in Clinical Medical Physics in Canada?	1669
<i>L. Conroy, E. Watt, W.L. Smith</i>	
Part XIX: Biophysics and Modelling	
The Value of Individual Measurements for Tumor Control Probability Predictions in Head and Neck Patients	1675
<i>I. Toma-Dasu, M. Hedman, A. Dasu</i>	

A Simulative Model Approach of Cardiopulmonary Interaction	1679
<i>C. Ngo, R. Schlözer, T. Vollmer, S. Winter, B. Misgeld, S. Leonhardt</i>	
Numerical Modeling of The Electrical Impedance Method of Peripheral Veins Localization	1683
<i>M.B. AL-Harosh, S.I. Shchukin</i>	
Finite Element Modeling of Gelatin Phantom from Measured Impedance Spectra	1687
<i>D. Dutra, A.M.R. Pinto, P. Bertemes-Filho</i>	
Improved Temperature Monitoring and Treatment Planning for Loco-Regional Hyperthermia Treatments of Non-Muscle Invasive Bladder Cancer (NMIBC)	1691
<i>G. Schooneveldt, H.P. Kok, E.D. Geijssen, F. van Ommen, A. Bakker, M.A. Westendarp Zanartu, J.J.M.C. H de la Rosette, M.C.C.M. Hulshof, T.M. de Reijke, J. Crezee</i>	
A Full 3D CFD Model Coupled with an Outflow Lumped Boundary and Inflow Total Pressure Formulation to Estimate Human Cardiac Perfusion	1695
<i>I. Fayssal, F. Moukalled, S. Alam, R. Habib, H. Ismaeel</i>	
Steered Molecular Dynamic Simulation Approaches for Computing the Blood Brain Barrier (BBB) Diffusion Coefficient	1699
<i>Maysam Z. Pedram, Amir Shamloo, Aria Alasti, Ebrahim Ghafar Zadeh</i>	
The Development of SIM to Characterize Blood Volumetric Flow Rate and Hemodynamics in Human Coronary Arteries	1704
<i>I. Fayssal, F. Moukalled</i>	
Determination of Bermang's Minimal Model Parameters for Diabetic Mice Treated with Ibervillea Sonorae	1708
<i>Emmanuel S. Sánchez-Velarde, Alejandro A. Sotelo-de Ávila, Itzamná O. Rico-Asención, Nayely R. Budar-Alemán, Rodrigo Sánchez-González, María G. Ramírez-Sotelo, Agustín I. Cabrera-Llanos</i>	
Radiation Pneumonitis and Low Dose Radiation Hypersensitivity	1712
<i>J.J. Gordon, K. Snyder, H. Zhong, K. Barton, Z. Sun, I.J. Chetty, M. Matuszak, R.K. Ten Haken</i>	
DNA Damage Induced in Glioblastoma Cells by I-131: A Comparison between Experimental Data and Monte Carlo Simulation	1717
<i>F. Koosha</i>	
Dose Enhancement during Concomitant Chemoradiotherapy Using FDA Approved Concentrations of Carboplatin and Oxaliplatin Nanoparticles	1723
<i>Gizem Cifter, Yucel Altundal, Alex Detappe, Erno Sajo, Ross Berbeco, Mike Makrigiorgos, Wilfred Ngwa</i>	
Concentrated Photoactivation: Focusing Light through Scattering	1727
<i>A. Gabriel, J. Machado, R. Gomes, J.M.P. Coelho, C.O. Silva, C.P. Reis, J.P. Santos, P. Vieira</i>	
Evaluation of Decomposition Analysis on Multi-models for Digital Volume Pulse Signal	1731
<i>Sheng-Cheng Huang, Hao-Yu Jan, Wen-Chen Lin, Cheng-Lun Tsia, Kang-Ping Lin</i>	
The Art of Engineering Medicine: A New Fast Non-Invasive Method to Directly Assess Ischemia in Human Diseased Coronary Arteries	1735
<i>I. Fayssal, F. Moukalled, S. Alam, R. Habib, H. Ismaeel</i>	

Obstructive and Sclerotic Disorders Affecting Carotid Blood Flow to the Brain	1739
<i>O. Onaizah, T.L. Poepping, M. Zamir</i>	
Investigation of Flow and Turbulence in Carotid Artery Models of Varying Compliance Using Particle Image Velocimetry	1743
<i>A.L. DiCarlo, T. Poepping</i>	
Finite Element Analysis of Dynamics of Two Microbubbles under Ultrasonic Field	1747
<i>Xiao-hui Qiu, Li-li Zhou, Yang yang, Xiao-jian Wang</i>	
Estimation of Tissue Temperature in Tumor Hyperthermia Using Ultrasonic Methods	1750
<i>Xiao-jian Wang, Xiao-hui Qiu</i>	
Author Index	1765
Keyword Index	1765