

Conference Program Report

The Joint Meeting of the 5th International Conference on Bioelectromagnetism and the 5th International Symposium on Noninvasive Functional Source Imaging within the Human Brain and Heart

Session Program TTS_Select = % ACCEPTED and NOT CANCELLED

Thursday, 12-05-2005 14:00 - 14:10

11.2.0 *Opening Session* (Great Hall, Slide)

11.2.0-1 **Welcome Remarks**, He, Bin ; *University of Minnesota* (138)

Thursday, 12-05-2005 14:10 - 15:30

11.1.1 *Plenary Session: EEG/MEG Source Imaging* (Great Hall, Slide)

Session Chairs: Bin He

11.1.1-1 **MEG and EEG Source Modeling With Accurate Anatomical Constraints**, Hämäläinen, Matti ; *Mass. General Hospital* (135)

11.1.1-2 **Standardized Multi-resolution Brain Electromagnetic Tomography (sMURETA): Methodological Aspects**, Pascual-Marqui, Roberto D; *University Hospital of Psychiatry* (137)

Thursday, 12-05-2005 15:50 - 17:30

11.1.2 *Plenary Session: Brain Source Localization* (Great Hall, Slide)

Session Chairs: Matti Hämäläinen

11.1.2-1 **Validation and Statistical Testing of MEG and EEG Inverse Solutions**, Leahy, Richard M ; *University of Southern California* (121)

11.1.2-2 **Source Localization: Controversies Regarding on the Nature of the Source**, Hecox, K., Fontanarosa, J., Lee, H. and Hunter, J.; *University of Chicago* (131)

11.1.2-3 **Influence of High-Rank Background Interference on Adaptive Beamformer Source Reconstruction**, Sekihara, Kensuke; Hild, Kenneth; Nagarajan, Srikantan S.; *Tokyo Metropolitan University* (30)

Friday, 13-05-2005 8:30 - 10:10

11.1.3 *Plenary Session: MR Technology and Multimodal Imaging* (Great Hall, Slide)

Session Chairs: Bin He, Eung Je Woo

11.1.3-1 **Ultrahigh Magnetic Fields for MR imaging and spectroscopy: an increasingly sensitive probe for brain function and chemistry**, Ugurbil, Kamil ; *Univ. of Minnesota* (133)

11.1.3-2 **Improved Estimation of Human Cortical Activity and Connectivity with the Multimodal Integration of Neuroelectric and Hemodynamic Data Related to Motor and Cognitive Tasks**, Babiloni, Fabio; Mattia, Donatella; Basilisco,

Alessandra; Astolfi, Laura; Cincotti, Febo, Ding, Lei; Christine, K; Sweeney, J; Edgar, J.C.; Miller, G.A.; He, Bin; *Univ. of Rome* (103)

- 11.1.3-3 ***Conductivity and Current Density Imaging of Animal Subject using MREIT Technique***, Woo, Eung Je; Lee, Soo Yeol; Kim, Tae-Seong; Oh, Suk Hoon; Lee, Byung Il; Park, Chunjae; Seo, Jin Keun; Lee, Suk-ho; Kwon, Ohin; *Kyung Hee University* (10)
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Friday, 13-05-2005 10:30 - 12:20

11.1.4 *Plenary Session: Brain and Neural Engineering* (Great Hall, Slide)

Session Chairs: José Carlos Príncipe, Daniel Graupe

- 11.1.4-1 ***Brain mechanisms of praxis: A multidisciplinary study***, Georgopoulos, Apostolos P ; *Univ. of Minnesota* (134)
- 11.1.4-2 ***Signal Processing Challenges in the Development of Brain Machine Interfaces***, Príncipe, José Carlos ; *Univ. of Florida* (132)
- 11.1.4-3 ***The Status of Noninvasive Functional Electrical Stimulation and Ambulation Performance for Thoracic-Level Complete Paraplegics***, Graupe, Daniel ; *University of Illinois, Chicago* (16)
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Friday, 13-05-2005 13:20 - 15:00

1.1.1 *Brain Inverse Imaging* (Presidents Room, Slide)

Session Chairs: Kensuke Sekihara, Roberto Pascual-Marqui

- 1.1.1-1 ***Local Linear Estimators and a Statistical Framework for Event Related Field Analysis***, Greenblatt, Richard E.; Ossadtchi, A.; Pflieger, M. E.; Rojas, D. C.; *Source Signal Imaging, Inc.* (93)
- 1.1.1-2 ***Detection of cortical patch activity in beamspace using the generalized likelihood ratio test***, Limpiti, Tulaya; Bolstad Andrew K; Van Veen, Barry D; Wakai, Ron T; *University of Wisconsin-Madison* (57)
- 1.1.1-3 ***Local Basis Expansions for MEG Source Localization.***, Mitra, Partha P; Maniar, H.; *Cold Spring Harbor Laboratory* (89)
- 1.1.1-4 ***A Graphical Model for Estimating Stimulus-Evoked Brain Responses in Noisy MEG data with Large Background Brain Activity***, Nagarajan, Srikantan S ; Attias, Hagai T; Sekihara, Kensuke; Hill, Kenneth E Jr.; *University of California, San Francisco* (37)
- 1.1.1-5 ***Imaging Brain Electric Sources by Means of a New Subspace Source Localization Approach – 3D-FINE***, Ding, Lei ; He, Bin; *University of Minnesota* (122)
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8.1.2 *Neurophysiology* (Room 324, Slide)

Session Chairs: Wim Van Drongelen, Kurt Hecox

- 8.1.2-1 ***Epileptiform Activity Patterns in Coupled Neuronal Networks***, Lee, Hyong C; Hereld, Mark; Stevens, Rick; van Drongelen, Wim; *University of Chicago Hospitals* (40)
- 8.1.2-2 ***Large Neural Simulations on Large Parallel Computers***, Hereld, Mark; Stevens, Rick L.; Teller, Justin; van Drongelen, Wim; Lee, Hyong E.; *Argonne National Laboratory* (90)

- 8.1.2-3 ***A rule-based firing model for neural networks***, Lytton, William W; Stewart, Mark; *SUNY Downstate* (18)
- 8.1.2-4 ***Measuring and modeling the spatiotemporal profile of neurotransmitter***, Jones, Mathew V ; *UW-Madison; Dept. of Physiology* (39)
- 8.1.2-5 ***A BOLD-fMRI study of the response in primary and secondary somatosensory cortices elicited by electric median nerve stimulation at different frequencies***, Ferretti, Antonio; Arienzo, Donatello; Del Gratta, Cosimo; Caulo, Massimo; Babiloni, Claudio; Tartaro, Armando; Rossini, Paolo Maria; Romani, Gian Luca ; *Institute for Advanced Biomedical Technologies* (59)

Friday, 13-05-2005 15:00 - 16:20

1.1.3 Brain Mapping and Source Imaging (Mississippi Room, Poster)

- 1.1.3-1 ***Separation of Phase-Locked and Non-Phase-Locked Activities Using Empirical Null-Distributions Obtained from Randomized Plus/Minus Averagings of Event-Related Epochs***, Sekihara, Kensuke; Nagarajan, Srikantan, S.; *Tokyo Metropolitan University* (29)
- 1.1.3-2 ***Indications of Sex Differences in Cortical Activation in Adult Attention-Deficit Hyperactivity Disorder***, Nagel, Sandra M.; Bowyer, Susan M.; Moran John E.; Tepley, Norm; *Saginaw Valley State University & Henry Ford Hosp.* (53)
- 1.1.3-3 ***Causality estimates among brain cortical areas by Partial Directed Coherence: simulations and application to real data***, Astolfi, Laura; Cincotti, Febo; Mattia, Donatella; Lai, Massimiliano; de Vico Fallani, Fabrizio; Salinari, Serenella; Baccalà, Luiz A.; Ursino, Mauro; Zavaglia, Melissa; Babiloni, Fabio; *University of Rome* (45)
- 1.1.3-4 ***A Versatile Approach to Detect Coherent Brain Areas with MEG***, Belardinelli, Paolo; Ciancetta, Luca; Del Gratta, Cosimo; Pizzella, Vittorio; Romani, Gian Luca ; *University of Chieti* (65)
- 1.1.3-5 ***On the Detection of the Number of Independent Sources from Scalp EEGs***, X. Bai, Bin He ; *University of Minnesota* (125)
- 1.1.3-6 ***Fast localization of current dipoles in MEG using a combined sphere and brain-shape model***, Hongyi Zhu, Gunnar Lindenblatt and Sailing He; *zhejiang university* (60)
- 1.1.3-7 ***Multivariate Autoregressive Modeling Combined with Simulated Annealing Optimization for Classifying Sources of Event Related Potentials***, Vasios, Christos E.; Matsopoulos, George K.; Ventouras, Errikos M.; Papageorgiou, Charalabos C.; Kontaxakis, Vassilis P.; Nikita, Konstantina S.; Uzunoglu, Nikolaos K.;; *National Technical University of Athens* (98)
- 1.1.3-8 ***Line-source Modeling and Estimation with Electroencephalography***, Cao, Nannan; Yetik, Imam S.; Nehorai, Arye; Muravchik, Carlos H.; Haueisen, Jens; *University of Illinois at Chicago* (35)
- 1.1.3-9 ***Camera-Guided Coordinate System Alignment for Neuromagnetic Source Estimation***, Yung-Cheng Cheng, Yong-Sheng Chen, Jen-Chuen Hsieh, and Li-Fen Chen; *Lab of Integrated Brain Research* (75)

- 1.1.3-10 ***Quantizing the Depth of Bioelectrical Sources for Non-Invasive 3D Imaging***, Besio, Walter; Fasiuddin, Mohammed ; *Louisiana Tech University* (88)
- 1.1.3-11 ***Auditory Evoked Magnetic Fields to Stimuli Causing Backward Masking***, Abe, Masaya; Kawakatsu, Masaki; Tanaka, Keita; Kotani Makoto; *Tokyo Denki University* (33)
- 1.1.3-12 ***An Improved fMRI-EEG Integration Algorithm for Cortical Current Density Estimation by Applying Twomey Regularization***, Zhongming Liu, Fedja Kecman, Bin He; *University of Minnesota* (119)
- 1.1.3-13 ***Somatotopy of the Anterior Cingulate Cortex and Supplementary Motor Area for electric stimulation of the median and tibial nerves: an fMRI study***, Ferretti, Antonio; Del Gratta, Cosimo; Arienzo, Donatello; Babiloni, Claudio; Caulo, Massimo; Tartaro, Armando; Rossini, Paolo Maria; Romani, Gian Luca ; *Institute for Advanced Biomedical Technologies* (61)
- 1.1.3-14 ***Statistical Mapping of Cortical Activities using Minimum-Variance Maximum-Discrimination Spatial Filtering***, Hung-Yi Liu, Yong-Sheng Chen, Li-Fen Chen, and Jen-Chuen Hsieh; *Lab of Intergrated Brain Research* (68)
- 1.1.3-15 ***Influence of anisotropic conductivity of the white matter tissue on EEG source reconstruction – a FEM simulation study***, Güllmar, D.;Reichenbach, J.R.; Anwander, A.; Knösche T.; Wolters, C.H.; Eiselt, M.Haueisen J.; *Friedrich-Schiller-University Jena* (66)
- 1.1.3-16 ***Noninvasive Localization of Epileptiform Interictal Spikes by means of Cortical Imaging using Realistic Geometry Boundary Element Head Models***, Lai, Yuan; van Dronghelen, Wim; Zhang, Xin; Frim, David M; Hecox, Kurt E; He, Bin; *University of Minnesota* (115)

4.1.3 *Methods in Forward/Inverse Problems* (Mississippi Room, Poster)

- 4.1.3-1 ***Imaging Methods for MEG/EEG Inverse Problem***, Adde, Geoffray ; *ENPC* (97)
- 4.1.3-2 ***Noninvasive Localization of Gastric Electrical Activity***, Cheng, Leo; Buist,Martin; Richards,William; Bradshaw,Alan; Pullan,Andrew; *University of Auckland* (28)
- 4.1.3-3 ***An iterative approach for determining the optimal orientations and transient behaviors of the dipoles using MEG data***, Zhu, Hongyi ; *zhejiang university* (70)
- 4.1.3-4 ***Use of Isolated Problem Approach for the multi-compartment BEM models of Electric Source Imaging***, Gençer, Nevzat G. , Akalýn-Acar, Zeynep; *Middle East Technical University* (22)
- 4.1.3-5 ***The Effect of White Matter Anisotropy on the EEG Forward Problem***, Kuzbik, Natasha L; Koles, Zoltan J.; *University of Alberta* (71)
- 4.1.3-6 ***Experimentally observed influence of anisotropic compartments in a volume conductor on magnetic field distribution generated by artificial current dipoles***, Liehr, Mario; Haueisen, Jens; *University Jena* (67)
- 4.1.3-7 ***Detection of Human Conductivity Distribution using One Component of Magnetic Flux Density***, Nuo Gao, Shanan Zhu, Bin He; *University of*

Minnesota (128)

- 4.1.3-8 ***Dipole Localization Errors due to not Incorporating Compartments with Anisotropic Conductivities: Simulation Study in a Spherical Head Model***, Hallez, Hans; Van Hese, Peter; Vanrumste, Bart; Boon, Paul; D'Asseler, Yves; Lemahieu, Ignace; Van de Walle, Rik; *Ghent University* (20)
- 4.1.3-9 ***Minimum Leadfield-Variance Beamformer with Voxel-Wise Orthonormal Leadfield***, Matani, Ayumu. Terazono, Yasushi. Hayakawa, Tomoe. Munetsuna, Shinji. Fujimaki, Norio.; *the University of Tokyo* (78)
- 4.1.3-10 ***The Concentration Problem for Vector Fields.***, Maniar, Hiren D.; Mitra, P. P.; *Cold Spring Harbor Laboratory* (87)
- 4.1.3-11 ***Calculation of stereotaxically registered brain conductivities and anisotropies using diffusion tensor MR Imaging***, Sotiropoulos, Stamatios N.; Mueller, Bryon; Lim, Kelvin O.; Steinmetz, Peter N. ; *University of Minnesota* (74)

Friday, 13-05-2005 16:20 - 18:00

4.1.1 EEG/MEG Forward Problem (Room 325, Slide)

Session Chairs: Zoltan Koles, Richard Leahy

- 4.1.1-1 ***Numerical Models for the Solution of the EEG/MEG Forward Problem***, Koles, Zoltan J ; *University of Alberta* (109)
- 4.1.1-2 ***Effect of Model Complexities and Tissue Anisotropies on EEG and MEG Simulations***, Ramon, Ceon ; *University of Washington* (56)
- 4.1.1-3 ***Sensitivity of EEG and MEG measurements to tissue conductivities***, Gençer, Nevzat G. , Acar Can E.; *Middle East Technical University* (107)
- 4.1.1-4 ***The Application of Magnetic Resonance Imaging to Develop Anatomically Correct Brain Models***, White, Tonya ; Magnotta, Vincent A.; *University of Minnesota* (34)
- 4.1.1-5 ***EEG Simulation Accuracy: Reference Choice and Head Models Extension***, Vatta, Federica M.; Bruno Paolo; Mininel Stefano; Inchingolo Paolo; *University of Trieste* (73)

8.1.1 Cardiac Electrophysiology (Room 324, Slide)

Session Chairs: Ramakrishna Mukkamala, Daming Wei

- 8.1.1-1 ***Virtual EP Lab: a Cyber Environment for Electrophysiological study***, Wei, Daming ; *University of Aizu* (130)
- 8.1.1-2 ***Model-based filtering, compression and classification of the ECG***, Clifford, Gari D.; Shoeb, Ali; McSharry, Patrick E.; Janz, Brian A.; *MIT* (102)
- 8.1.1-3 ***Determination of Intra-Atrial Fibrillatory Cycle Length From the Electrocardiogram Using Auto-Correlation Analysis***, Narayan, Sanjiv M.; Kahn, Andrew M.; Brown, Jason P.;Krummen, David E.;Bhargava, Valmik; Feld, Gregory K.; *University of California, San Diego* (99)
- 8.1.1-4 ***Extraction of Fetal ECG from Maternal ECG Early in Pregnancy***, Graupe, Daniel; Zhong, Yunde; Graupe Menachem H. ; *University of Illinois, Chicago* (15)

- 8.1.1-5 ***QT/RR hysteresis in ECG recordings***, Pueyo, Esther; Malik, Marek; Laguna, Pablo ; *Universidad de Zaragoza* (106)
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Saturday, 14-05-2005 8:30 - 10:10

11.1.5 Plenary Session: Electrocardiographic Imaging (Great Hall, Slide)

Session Chairs: Fred Greensite, Bin He

- 11.1.5-1 ***Noninvasive Imaging of Cardiac Electrophysiology (NICE) – cardiac surface formulations***, Greensite, Fred ; *Univ. of California, Irvine* (136)
- 11.1.5-2 ***The potential and the limitations in activation time imaging from surface ECG recordings***, Tilg, Bernhard ; *UMIT - Private Universität für Gesundheitswissensc* (120)
- 11.1.5-3 ***Electrocardiographic Imaging: From 2-dimension towards 3-dimension***, He, Bin ; *University of Minnesota* (126)
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Saturday, 14-05-2005 10:30 - 12:00

11.1.6 Plenary Session: Quantitative Electrocardiography (Great Hall, Slide)

Session Chairs: Bernhard Tilg, Bin He

- 11.1.6-1 ***Quantitative Electrocardiography: Two Steps Forward and One Step Back***, MacLeod, Rob S. and Brooks, Dana H.; *University of Utah* (110)
- 11.1.6-2 ***Cardiac Signal Processing for Therapy and Monitoring in Implantable Medical Devices***, Olson, Walter ; *Medtronic, Inc* (127)
- 11.1.6-3 ***Non-contact Mapping and Concomitant Hemodynamic Assessment for the Study of Heart Diseases and Their Treatments***, Iaizzo, Paul A ; *University of Minnesota* (112)
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Saturday, 14-05-2005 13:20 - 15:00

1.1.2 Brain Mapping (Room 324, Slide)

Session Chairs: Fabio Babiloni, George Zouridakis

- 1.1.2-1 ***Phase Aspects and Localization Analysis of the Auditory N100 Component***, Zouridakis, George; Iyer, Darshan; *University of Houston* (108)
- 1.1.2-2 ***Maximum Entropy Estimation of Neuroelectric Source Covariance Statistics***, Pflieger, Mark E ; *Source Signal Imaging* (94)
- 1.1.2-3 ***Evaluating the Entrainment of the Alpha Rhythm during Photic Stimulation in Control Subjects and Patients with Alzheimer's Disease***, Kohdabashi, A., Sekine, M. , Higashi, Y., Fujimoto, T., Tamura, T. ; *Chiba University* (44)
- 1.1.2-4 ***Cortical Dipole Imaging of Movement-related Potentials in Humans by Means of Parametric Inverse Filter***, Hori, Junichi; Miwa, Toshinari; He, Bin; *Niigata University* (23)
- 1.1.2-5 ***Do stimuli or tasks determine lateralized auditory cortex responses? An MEG study***, Sieluzycski, Cezary; König, Reinhard; Simserides, Constantinos; Scheich, Henning; *Leibnitz Institute for Neurobiology* (77)
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4.1.2 Software for Bioelectric Mapping/Modeling (Presidents Room, Slide)

Session Chairs: Rob Macleod, John Mosher

- 4.1.2-1 ***BrainStorm Electromagnetic Imaging Software***, Mosher, John C.; Baillet, Sylvain; Darvas, Felix; Pantazis, Dimitrios; Kucukaltun-Yildirim, Esen; Leahy, Richard M.; *Los Alamos National Laboratory* (116)
- 4.1.2-2 ***The inverse problem of electrocardiography: industrial solutions and simulations***, Voth, Eric J ; *Endocardial Solutions* (76)
- 4.1.2-3 ***Software challenges in the new field of integrated cardiac models***, Stinstra, Jeroen G; Weinstein, Dave M; Hopenfeld, Bruce; John Pormann; Henriquez Craig S; MacLeod, Rob S; *University of Utah* (85)
- 4.1.2-4 ***Generic and Specific Software Tools for Bioelectric Source Modeling***, Oostendorp, thom F ; *Radboud University Nijmegen* (21)
- 4.1.2-5 ***Influence of Local and Remote White Matter Conductivity Anisotropy for a Thalamic Source on EEG/MEG Field and Return Current Computation***, Wolters, Carsten H.; Anwander, Alfred; Tricoche, Xavier; Lew, Seok; Johnson, Chris R.; *University of Muenster* (38)

Saturday, 14-05-2005 15:00 - 16:20

3.1.2 Cardiac Mapping (Mississippi Room, Poster)

- 3.1.2-1 ***Non-Invasive Electrical Imaging of Heart: 3D Ultrasound based Heart Surface Reconstruction for Patient Specific Approach***, Suresh Kumar, Krishnamurthy N ; Ramasubba, Reddy M; *Indian Institute of Technology Madras* (92)
- 3.1.2-2 ***Wavefront-based inverse electrocardiography using an evolving curve state vector and phenomenological propagation and potential models***, Ghodrati, Alireza; Brooks, Dana H; Tadmor, Gilead; Punske, Bonnie; MacLeod, Rob; *Northeastern University* (82)
- 3.1.2-3 ***Forward Problem of Intracavitary Potentials Based on an Anisotropic Whole Heart Model***, Zhu, Xin; Wei, Daming; Wang, Hui; *the University of Aizu* (43)
- 3.1.2-4 ***Simulated Comparison of Disc and Concentric Electrode Maps During Atrial Arrhythmias.***, Soundararajan, VenkateshBabu ; *Louisiana Tech University* (80)
- 3.1.2-5 ***Effects of cardiac anisotropy on three-dimensional ECG localization inverse solutions: a model study***, Liu, Chenguang ; He, Bin ; *University of Minnesota* (124)
- 3.1.2-6 ***Clinical Parameter Assessment in Magnetocardiography by Using the Support Vector Machine***, Kim, Kiwoong; Kwon, Hyukchan; Lee, Yong-Ho; Kim, Tae-Eun; Kim, Jin-Mok; Park, Yong-Ki; Moon, Jae-Youn; Ko, Young-Guk; Chung, Namsik; *Korea Research Institute of Standards and Science* (83)
- 3.1.2-7 ***Selection of the Number and Location of Leads for Catheter Based Epicardial Mapping***, Yilmaz, Bulent; MacLeod, Robert S. ; *Baskent University* (32)

5.1.3 Bioelectromagnetism 2 (Mississippi Room, Poster)

- 5.1.3-1 ***Feature Extraction of Hyperspectral Data for under Spilled Blood Visualization Using Particle Swarm Optimization***, Monteiro, Sildomar T.; Uto, Kuniaki; Kosugi, Yukio; Kobayashi, Nobuyuki; Watanabe, Eiju; Kameyama, Keisuke; *Tokyo Institute of Technology* (46)
- 5.1.3-2 ***Optimizing bipolar electrode location for wireless ECG measurement – analysis of ECG signal strength and deviation between individuals***, Puurtinen, Merja; Hyttinen, Jari; Malmivuo, Jaakko; *RGI / TUT* (48)
- 5.1.3-3 ***Focus of the Implantable Device’s Measurement Sensitivity –Application of Half-Sensitivity Volume Concept***, Väisänen, Juho ; Hyttinen, Jari; Malmivuo, Jaakko; *Tampere University of Technology* (47)
- 5.1.3-4 ***A Virtual System for Simultaneous Multi-frequency Measurement of Electrical Bioimpedance***, Gordon, Rauno; Land, Raul; Min, Mart; Parve, Toomas; Salo, Rodney W ; *Tallinn University of Technology* (63)
- 5.1.3-5 ***Fetal cardiac time intervals: validation of an automatic tool for beat-to-beat detection on fetal magnetocardiograms***, Mantini, Dante ; Comani, Silvia ; Alleva, Giovanna ; Romani, Gian Luca; *Marche Polytechnic University* (50)
- 5.1.3-6 ***Independent component analysis and fetal magnetocardiography: a tool for the automatic classification of independent components***, Mantini, Dante ; Comani, Silvia ; Alleva, Giovanna ; Romani, Gian Luca; *Marche Polytechnic University* (51)

8.1.3 Electrophysiology (Mississippi Room, Poster)

- 8.1.3-1 ***Monitoring Inter-Atrial Block with Pacemaker Electrodes***, Belalcazar, Andres; Patterson, Robert P.; *University of Minnesota* (84)
- 8.1.3-2 ***Design of Multi-channel Brain Magnetic Stimulator and ANSYS Simulation***, Xuemin, Wang; Yun, Chen; Mingxia, Guo; Mingshi, Wang; *Tianjin University* (26)
- 8.1.3-3 ***Spiral Waves in the Mathematical Models of Simulated Ischemia***, Hong Zhang; Zhen-xi Zhang; Lin Yang; Yin-bin Jin ; Yi-zhuo Huang ; *School of Life Science and Technology* (7)
- 8.1.3-4 ***EEG based automated detection of anesthetic levels using a recurrent artificial neural network***, V.Srinivasan, C.Eswaran, and N.Sriraam; *Multimedia University* (27)
- 8.1.3-5 ***Design and Development of a Novel EOG Biopotential Amplifier***, Roy Choudhury, Shubhodeep; Soundararajan, Venkataramanan; B. Nemade, Harshal; Singh Sahambi, Jyotindar ; *Indian Institute of Technology (IIT), Guwahati* (11)
- 8.1.3-6 ***EEG and MEG responses following stimulation of unmyelinated C fibers***, Qiu, Yunhai ; *National Institute for Physiological Sciences* (31)

10.1.1 New Approaches in Bioelectromagnetism (Mississippi Room, Poster)

- 10.1.1-1 ***Study of MRI/MEA compatibility at 17.6 Tesla***, Sadleir, Rosalind J.; Grant, S.C.; DeMarse, T.B.; Woo, E.J.; Lee, S.Y.; Kim, T.S.; Oh, S.H.; Lee, B.I.; Seo, J.K.; *University of Florida* (14)

- 10.1.1-2 ***Magnetoacoustic Tomography with Magnetic Stimulation (MAT-MS)***, Xu, Yuan; He, Bin ; *University of Minnesota* (123)
- 10.1.1-3 ***Calculation of B1 fields in MRI Coils by the Method of Moments***, C. C. Olson, J. T. Vaughan, A. Gopinath; *University of Minnesota* (42)
- 10.1.1-4 ***Using Conditional Mutual Information to Approximate Causality for Multivariate Physiological Time Series***, Pflieger, Mark E.; Greenblatt, Richard E.; *Source Signal Imaging* (95)
- 10.1.1-5 ***An improvement of a time-frequency approach for an EEG-based brain-computer interface***, Yamawaki, Nobuyuki ; Wilke, Christopher; Liu, Zhongming; He, Bin; *University of Minnesota* (114)
- 10.1.1-6 ***An EEG Inverse Solution based Brain-Computer Interface***, Kamousi, Baharan; Liu Zhongming; He Bin; *University of Minnesota* (117)

Saturday, 14-05-2005 16:20 - 18:00

5.1.1 Cardiac Modeling (Presidents Room, Slide)

Session Chairs: Gerald Fischer, Edward Vigmond

- 5.1.1-1 ***A Computationally Efficient Activation Model for Noninvasive Imaging of Cardiac Depolarization***, Fischer, Gerald ; *UMIT / Institute for Biomedical Signal Processing* (96)
- 5.1.1-2 ***An Externally Stimulated Purkinje System Model with Enforced Current Continuity***, Vigmond, Edward J; Clements, Clyde; *University of Calgary* (62)
- 5.1.1-3 ***What of Cleavage Planes? The State-of-the-Art in Microstructure Modeling of Cardiac Activation.***, Trew, Mark;Smail, Bruce;Pullan, Andrew; *University of Auckland* (36)
- 5.1.1-4 ***An efficient method for simulating propagation sequences in a realistic heart geometry***, Hopenfeld, Bruce ; *National Institutes of Health* (58)
- 5.1.1-5 ***Personalized Model of Cardiac Electrophysiology of a Patient***, D. S. Farina, O. Skipa, C. Kaltwasser, O. Doessel, W. R. Bauer; *University of Karlsruhe (TH)* (64)

5.1.2 Bio-impedance and Bioelectric Forward/Inverse Solutions (Room 324, Slide)

Session Chairs: Jaakko Malmivuo, Thom Oostendorp

- 5.1.2-1 ***In vivo conductivity estimation with symmetric boundary elements***, Clerc, Maureen; Adde, Geoffray; Kybic, Jan; Papadopoulo, Theo; Badier, Jean-Michel; *INRIA / ENPC* (17)
- 5.1.2-2 ***Estimation of in vivo Human Brain-to-Skull Conductivity Ratio by means of Cortical Potential Imaging***, Lai, Yuan; van Drongelen, Wim; Ding, Lei; Hecox, Kurt E.; Towle, Vernon L.; Frim David M; He, Bin; *University of Minnesota* (113)
- 5.1.2-3 ***An In-Principle Method for Measuring Cardiac Tissue Fibre Rotation***, Johnston, Barbara M and Johnston, Peter R ; *Griffith University* (105)
- 5.1.2-4 ***Effect of skull resistivity and measurement noise on the spatial resolution of EEG***, Ryyänen, Outi; Hyttinen, Jari; Malmivuo, Jaakko; *Tampere University of Technology* (55)

- 5.1.2-5 **2D Stochastic Finite Element Study of the Influence of Organ Conductivity in ECG Forward Modeling**, Geneser, Sarah E.; Choe, Seungkeol; Kirby, Robert M.; MacLeod, Robert S. ; *University of Utah* (111)
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Sunday, 15-05-2005 8:15 - 08:30

11.2.3 *Young Investigator Awards Announcement* (Great Hall, Slide)

Session Chairs: Emad Ebbini

- 11.2.3-1 **On the Selection of Young Investigator Awards**, Ebbini, Emad S; *Dept. of Electrical/Computer Engineering* (143)
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Sunday, 15-05-2005 8:30 - 10:00

11.1.7 *Plenary Session: Functional Biomedical Imaging* (Great Hall, Slide)

Session Chairs: Wei Chen, Emad Ebbini

- 11.1.7-1 **Magnetic Resonance Study of Brain Function and Bioenergetics at High Fields**, Chen, Wei ; *University of Minnesota* (104)
- 11.1.7-2 **Detection and localization of microbubble activity in the microvasculature: Towards functional ultrasonic imaging**, Ebbini, Emad S ; *Dept. of Electrical/Computer Engineering* (141)
- 11.1.7-3 **Using high resolution finite difference models to determine the physiological source of bio-impedance changes**, R.P. Patterson, A. Belalcazar, and F. Yang; *University of Minnesota* (142)
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Sunday, 15-05-2005 10:20 - 12:00

3.1.1 *Bioelectromagnetism I* (Presidents Room, Slide)

Session Chairs: Jaakko Malmivuo, Andrew Pullan

- 3.1.1-1 **An Animal Study on Noninvasive Localization of the Site of Origin of Cardiac Activation from BSPM**, Zhang, X; Liu, CG; Muneer, B; Ramachandra, I; Liu, ZM; Pogwizd, SM; He, B ; *University of Minnesota* (118)
- 3.1.1-2 **Electrophysiologic Assessment of Right Ventricular Cardiac Pacing Sites Employing Non-Contact Electrical Mapping**, Skadsberg, Nick D.; Coles Jr., James A.; Iaizzo, Paul A.; *Medtronic* (41)
- 3.1.1-3 **Fetal Magnetocardiographic Source Separation : Independent Component Analysis Techniques and Signal-Space Projection**, Campbell, Joshua Q.; Eswaran, Hari ;Wilson, James D. ;Murphy, Pamela ;Lowery, Curtis L. ;Preissl, Hubert; *University of Arkansas for Medical Sciences* (69)
- 3.1.1-4 **The tissue-internal current density threshold of the skin receptors on electrocutaneous sensations caused by 50 Hz leakage currents**, Lindenblatt, Gunnar; Zhu, Hongyi; Silny, Jiri; *Centre for Optical and Electromagnetic Research* (25)
- 3.1.1-5 **Development of a Multiple Vital Signs Monitoring System for m-Healthcare**, Chen, Wenxi; Wei, Daming; Cohen, Michael; Ding, Shuxue; Tokinoya, Shigeru; Takeda, Naotoshi; *The University of Aizu* (129)
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9.1.1 *Impedance Imaging* (Room 324, Slide)

Session Chairs: Robert Patterson, Dana Brooks

- 9.1.1-1 ***Magnetic Resonance Electrical Impedance Tomography (MREIT) at 11 Tesla field strength: Preliminary Experimental Study***, Sadleir, Rosalind J.; Grant, S.C.; Silver, X.; Zhang, S.U.; Woo, E.J.; Lee, S.Y.; Kim, T.S.; Oh, S.H.; Lee, B.I.; Seo, J.K.; *University of Florida* (9)
- 9.1.1-2 ***Sensitivity Distribution Simulations of Impedance Tomography Electrode Combinations***, Kauppinen, Pasi K ; Hyttinen, Jari A. K.; Malmivuo, J. A. V.; *Tampere University of Technology* (54)
- 9.1.1-3 ***Experimental Validation of Forward and Inverse Solutions for Electrical Impedance Tomography Using the Boundary Element Method***, Babaeizadeh, Saeed; Brooks, Dana H.; Isaacson, David; Newell, Jonathan C.; *Northeastern University* (72)
- 9.1.1-4 ***A Matlab Toolbox for Magnetic Resonance Electrical Impedance Tomography (MREIT): MREIT Toolbox***, Kim, Tae-Seong; Lee, Byung Il; Park, Chun Jae; Lee, Suk Ho; Tak, Sung Ho; Seo, Jin Keun; Kwon, Ohin; Woo, Eung Je; *Kyung Hee University* (12)
- 9.1.1-5 ***Is it possible to measure non-invasively brain conductivity fluctuations during reactions to external stimuli with the use of microwaves?***, I. S. Karanasiou, C. Papageorgiou, and N. K. Uzunoglu; *National Technical University of Athens* (100)
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