

Scientific Program

Monday, September 8, 2014, 08:15

M1: Rosanna Degani Young Investigator Finals

Room: Grand Ballroom

Chair(s): Peter Macfarlane and Willem Dassen

- 1-113 **Identification of Myocardial Scar in Ventricular Tachycardia: Correlation between CT based results and Electro-Anatomic Map Findings**
Sofia Antunes*, Antonio Esposito, Giuseppe Macabelli, Anna Palmisano, Caterina Colantoni, Sebastiano Colombo, Paolo della Bella, Sergio Cerutti and Giovanna Rizzo
- 2-382 **How does Uncoupling in Ventricular Tissue Affect Conduction at Purkinje-Myocardial Junctions?**
Elham Behradfar*, Anders Nygren, Fu Siong Ng and Edward J Vigmond
- 3-121 **Physiology-based Regularization Improves Noninvasive Reconstruction and Localization of Cardiac Electrical Activity**
Matthijs JM Cluitmans*, Monique MJ de Jong, Paul GA Volders, Ralf LM Peeters and Ronald L Westra
- 4-251 **Non-invasive Detection of Reentrant Drivers during Atrial Fibrillation: a Clinical-Computational Study**
Miguel Rodrigo*, Andreu M Climent, Alejandro Liberos, Jorge Pedrón-Torrecilla, José Millet, Francisco Fernández-Avilés, Felipe Atenza, Omer Berenfeld and Maria S Guillem

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S21: Cardiac Mechanics

Room: Skyline A

Chair(s): Andrew Blaber and Elisabete Aramendi

- 5-374 **Using Seismocardiogram for Detection of Ischemia by Extraction of Systolic and Diastolic Time Variability**
Farzad Khosrow-Khavar, Andrew Blaber, Carlo Menon and Kouhyar Tavakolian*
- 6-277 **Modeling Mechanical Response of the Chest During the Cardiopulmonary Resuscitation Procedure**
Ali Jalali*, Vinay Nadkarni and C Nataraj
- 7-118 **Empirical Mode Decomposition for Chest Compression and Ventilation Detection in Cardiac Arrest**
Erik Alonso*, Elisabete Aramendi, Digna González-Otero, Unai Ayala, Mohamud Daya and James K Russell
- 8-91 **Evaluation of Aortic Flow Alterations using MRI: Associations with Left Ventricular Remodeling**
Ioannis Bargiotas*, Emilie Bollache, Alain De Cesare, Alban Redheuil, Elie Mousseaux and Nadjia Kachenoura
- 9-80 **ECG Analysis during Continuous-flow LVAD**
O Meste*, A Cabasson, L Fresiello, MG Trivella, A di Molfetta, G Ferrari and F Bernini
- 10-227 **Effects of Cardiac Resynchronization Therapy on the First Heart Sound Energy**
Ask Schou Jensen*, Samuel Emil Schmidt, Johannes Jan Struijk, John Hansen, Claus Graff, Jacob Melgaard, Tanveer Ahmed Bhuiyan, Kasper Emerek and Peter Soegaard

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S22: ECG Noise Cancellation

Room: Grand Ballroom A

Chair(s): John Wang and Aline Cabasson

- 11-210 **A Flexible PCA-based ECG Reconstruction Algorithm with Confidence Estimation for ECG during Exercise**
Steffen A Mann* and Reinhold Orglmeister
- 12-315 **Coherence as a Measure of Noise in the ECG**
Johannes Struijk*, Claus Graff, Joergen Kanters, Joel Xue, Ask Schou Jensen and Samuel Schmidt
- 13-386 **A Framework for ECG Signal Preprocessing based on Quadratic Variation Reduction**
Valeria Villani* and Antonio Fasano
- 14-381 **Electrocardiogram Artifact Cancellation based on Empirical Mode Decomposition and Peak Detection using Dual-Slope Algorithm**
Mohammadreza Ravanfar, Riadh Arefin, Kouhyar Tavakolian and Reza Fazel-Rezai*
- 15-111 **Extracting a Clean ECG from a Noisy Recording: A New Method based on Segmented-beat Modulation**
Angela Agostinelli*, Corrado Giuliani and Laura Burattini
- 16-63 **A Bayesian Filtering Framework for Accurate Extracting of the Non Invasive FECG Morphology**
Joachim Behar*, Fernando Andreotti, Julien Oster and Gari Clifford

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S23: Cellular and Genetic Ventricular Arrhythmic Modeling

Room: Skyline C

Chair(s): Marek Malik and Niels Otani

- 17-28 **A Boolean Network of Crosstalk between IGF and Wnt Signalling**
Lea Siegle, Ludwig Lausser, Michael Kühl and Hans A Kestler*
- 18-271 **Modelling the Functional Impact of KCNA5 Mutations on the Electrical and Mechanical Activities of Human Atrial Cells**
Haibo Ni*, Michael Colman and Henggui Zhang
- 19-73 **Simulation of Re-entrant Wave Dynamics in a 2-D Sheet of Human Ventricle with KCNJ2-linked Variant 3 Short QT Syndrome**
Kuanquan Wang*, Cunjin Luo, Yongfeng Yuan, Weigang Lu and Henggui Zhang
- 20-383 **The Effect of Random Cell Decoupling on Electrogram Fractionation near the Percolation Threshold in Microstructural Models of Cardiac Tissue**
Marjorie Hubbard* and Craig Henriquez
- 21-44 **Computational Modeling Supports Induced Pluripotent Stem Cell-derived Cardiomyocytes Reliability as a Model for Human LQT3**
Michelangelo Paci*, Stefano Severi and Jari Hyttinen
- 22-85 **Contribution of developmental changes in energy metabolism to excitation-contraction coupling of the ventricular cell: a simulation study**
Hitomi Sano*, Tamami Toki, Yasuhiro Naito and Masaru Tomita

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S24: Pathophysiology of Heart Rate Variability

Room: Grand Ballroom B

Chair(s): Luca Mainardi and Luca Citi

- 23-373 **Point Process Heartbeat Dynamics Assessment of Neurocardiogenic Syncope in Children**
Digna M González-Otero*, Ronald G García, Gaetano Valenza, Laura M Reyes and Riccardo Barbieri
- 24-39 **Lower Instantaneous Entropy of Heartbeat Dynamics Characterizes Cognitive Impairment in Parkinson's Disease**
Riccardo Barbieri*, Gaetano Valenza, Luca Citi, Maria Guerrisi, Stefano Orsolini, Carlo Tessa, Stefano Diciotti and Nicola Toschi
- 25-209 **Analysing Cardiac Aautonomic Neuropathy in Diabetes using Electrocardiogram-derived Systolic-diastolic Interval Interactions**
Mohammad Hasan Imam*, Chandan Karmakar, Ahsan Khandoker, Herbert F Jelinek and Marimuthu Palaniswami
- 26-132 **Long-term HRV in Critically Ill Pediatric Patients: Coma versus Brain Death**
Ana Paula Rocha*, Rute Almeida, Argentina Leite, Marta João Silva and Maria Eduarda Silva
- 27-105 **Automated Selection of measures of Heart Rate Variability for Detection of Early Cardiac Autonomic Neuropathy**
David J Cornforth, Mika P Tarvainen and Herbert F Jelinek*
- 28-206 **Coupling Between Short-Term Heart Rate and Diastolic Period is Reduced in Heart Failure Patients as Indicated by Multivariate Entropy Analysis**
Peng Li, Lizhen Ji, Chang Yan, Ke Li, Chengyu Liu* and Changchun Liu

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S31: Cardiac MRI & CT

Room: Skyline A

Chair(s): Cristiana Corsi and Victor Mor-Avi

29-325 Volumetric Identification of Left Atrial Fibrosis from Delayed Enhancement Magnetic Resonance Imaging: Preliminary Results

Roberta Leonardi, Federico Veronesi, Stefano Severi, Roberto Mantovan and Cristiana Corsi*

30-157 A Practical Algorithm for Improving Localization and Quantification of Left Ventricular Scar

Brian Zenger*, Joshua Cates, Alan Morris, Eugene Kholmovski, Alexander Au, Ravi Ranjan, Nazem Akoum, Chris McGann, Brent Wilson, Nassir Marrouche, Frederick Han and Rob MacLeod

31-390 Fully Automated Assessment of Left Ventricular Volumes, Function and Mass from Cardiac MRI

Marco Marino*, Federico Veronesi, Giacomo Tarroni, Victor Mor-Avi, Amit Patel and Cristiana Corsi

32-32 Quantitative Evaluation of Myocardial Ischemia by Cardiac Magnetic Resonance Imaging

Siyi Huang*, Jingwei Pan, Lin Yu, Xin Yang and Meng Wei

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S32: Electrophysiology Analysis

Room: Skyline C

Chair(s): Steven Swiryn and Jean-Marc Vesin

33-281 The Maximum Electrical Fields in the Implant Regions of Implantable Cardiac Rhythm Devices for the Worst Case RF Heating during MRI Scans in 1.5 T

Dawel Li, Xiaoyi Min*, Shiloh Sison and Ji Chen

34-98 Cardiac Arrhythmia Discrimination Using Evolutionary Computation

Juan Francisco Martín-García, Inmaculada Mora-Jiménez, Arcadio García-Alberola and José Luis Rojo-Álvarez*

35-96 A Morphology-Based Spatial Consistency Algorithm to Improve EGM Delineation in Ventricular Electroanatomical Mapping

Alejandro Alcaine, David Soto-Iglesias, David Andreu, Juan Acosta, Antonio Berruezo, Pablo Laguna*, Oscar Camara and Juan Pablo Martínez

36-254 Localization of the Latest-Activated Areas in the Ventricles from Body Surface Potential Maps

Jana Svehlikova*, Mark Potse and Milan Tysler

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S33: ECG Decision Support Systems

Room: Grand Ballroom A

Chair(s): Sara Mariani and Dave Mortara

37-314 Comparison of Different Methods and Catheter Designs to Estimate the Rotor Tip Position – A Simulation Study

Markus Rottmann*, Matthias W Keller, Tobias Oesterlein, Gunnar Seemann and Olaf Dössel

38-290 Analysis of the QRS Alterations during Stress Test Recordings on Patients with Brugada Syndrome

Daniel Romero*, Nathalie Behar, Alba Martín-Yebra, Juan Pablo Martínez, Pablo Laguna, Esther Pueyo, Guy Carrault, Philippe Mabo and Alfredo Hernández

39-285 A New Phase Space Analysis Algorithm for the Early Detection of Syncope During Head Up Tilt Tests

Nadine Khodor*, Guy Carrault, David Matelot, Hassan Amoud, Nathalie Ville, Mohamad Khalil, Francois Carre and Alfredo Hernandez

40-249 Automatic Detection of ECG Lead-wire Interchange for Conventional and Mason-Likar Lead Systems

Chengzong Han*, Richard Gregg and Saeed Babaeizadeh

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S34: Physionet Inspired Studies

Room: Grand Ballroom B

Chair(s): Ikaro Silva and Pilip de Chazal

- 41-89 **A Multi-modal Approach to Sleep-Wake Classification in Infants using Minimally Invasive Sensors**
Gregory Cohen and Philip De Chazal*
- 42-340 **Classification of Sleep Disordered Breathing in the Evaluation of Acoustic Sound in Correlation with the ECG Signal**
Klaudia Kinga Proniewska*, Krzysztof Malinowski, Elżbieta Pociask and Bartosz Proniewski
- 43-143 **Preprocessing and Mortality Prediction: the Physionet/CinC 2012 Challenge Revisited**
Alistair E W Johnson* and Gari D Clifford
- 44-378 **Scaling the PhysioNet WFDB Toolbox for MATLAB and Octave**
Tristan Naumann* and Ikaro Silva

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S41: Repolarization and Risk

Room: Grand Ballroom A

Chair(s): Thomas Brennan and Paul Kligfield

- 45-47 **A Quantitative QT Hysteresis Model**
David Mortara* and Fabio Badilini
- 46-124 **Ventricular Arrhythmias Assessment: a New Repolarization Index of Risk**
Corrado Giuliani, Cees A Swenne, Sumche Man, Angela Agostinelli and Laura Burattini*
- 47-219 **QT/RR and T-peak-to-end/RR Curvatures in Chronic Heart Failure Patients**
Julia Ramírez*, Iwona Cygankiewicz, Pablo Laguna, Marek Malik and Esther Pueyo
- 48-119 **T-wave Alternans Rate of Change with Exercise for Cardiac Risk Assessment**
Laura Burattini*, Sumche Man, Giovanni Ottaviano, Sandro Fioretti, Francesco Di Nardo and Cees A Swenne
- 49-83 **Repolarization lability measured by spatial TT' angle**
Larisa Tereshchenko*
- 50-197 **Tensor-based Detection of T Wave Alternans in Multilead ECG Signals**
Griet Goovaerts*, Carolina Varon, Bert Vandenberk, Rik Willems and Sabine Van Huffel

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S42: Electrophysiology Modelling

Room: Grand Ballroom B

Chair(s): Frida Sandbergg and Trygve Eftestøl

- 51-359 **Controlled Cardiac Activation for Robust Interrogation of the Electrophysiological Substrate**
Joshua JE Blauer*, Fred Han, Ravi Ranjan, Nassir F Marrouche and Rob S MacLeod
- 52-331 **A Novel method for Quantifying Localised Correlation of Late-gadolinium Intensity with Conduction Velocity**
Rheeda L Ali*, Chris D Cantwell, Caroline H Roney, Norman A Qureshi, Phang Boon Lim, Jennifer H Siggers, Spencer J Sherwin and Nicholas S Peters
- 53-182 **Defibrillation Thresholds: A Generalised Polynomial Chaos Study**
Peter R Johnston*
- 54-241 **Formulation of ATP Sensitive K⁺ Current and Action Potential shape in Models of Human Ventricular Myocytes**
Mitra Abbasi* and Richard Clayton
- 55-169 **High Specificity IEGM Beat Detection by Combining Morphological and Temporal Classification for a Cardiac Neuromodulation System**
Antje Pohl*, Carl Henning Lubba, Maren Thore, Nima Hatam and Steffen Leonhardt
- 56-358 **Fitting Membrane Resistance in Single Cardiac Myocytes Reduces Variability in Parameters**
Jaspreet Kaur*, Anders Nygren and Edward Vigmond

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S43: Algorithmic and Software Tools

Room: Skyline A

Chair(s): Kouhyar Tavakolian and Dana Brooks

- 57-270 **New Additions to the Toolkit for Forward/Inverse Problems in Electrocardiography within the SCIRun Problem Solving Environment**
Jaume Coll-Font*, Brett Burton, Jess Tate, Burak Erem, Darrell Swenson, Dafang Wang, Dana Brooks, Peter van Dam and Rob MacLeod
- 58-171 **A Feasibility Study using Image-based Parallel Modeling for Treatment Planning**
Amanda Randles*, Michael Driscoll, Erik Draeger and Franziska Michor
- 59-391 **Spiral Waves Clustering Using Normalized Compression Distance**
Celal Alagoz*, Andrew R Cohen, Allon Guez and John R Bullinga
- 60-203 **Interactive Simulation of heart rhythm: A new educational feature of ECGSIM**
Peter M van Dam*, Eelco M van Dam, Adriaan van Oosterom and Thom F Oostendorp
- 61-151 **Myokit: A Framework for Computational Cellular Electrophysiology**
Michael Clerx*, Paul GA Volders and Pieter Collins
- 62-165 **A Novel Method for Rotor Tracking using Bipolar Electrogram Phase**
Caroline H Roney*, Chris D Cantwell, Jennifer H Siggers, Fu Siong Ng and Nicholas S Peters

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S44: Temporal Aspects of CV Signals

Room: Skyline C

Chair(s): Olaf Doessel and Sabine van Huffel

- 63-156 **Analysis of Cardiovascular Time Series using Multivariate Sample Entropy: A Comparison between Normal and Congestive Heart Failure Subjects**
Chengyu Liu*, Dingchang Zheng, Lina Zhao, Changchun Liu and Alan Murray
- 64-264 **Comparison of Left Ventricular Ejection Time from Echocardiography, Impedance Cardiography and Photoplethysmography**
Wenfeng Duan*, Dingchang Zheng, Christopher Eggett, Philip Langley and Alan Murray
- 65-342 **Simulating the Relation Between APD and QT Time in Human Ventricles**
Gunnar Seemann*, David UJ Keller and Olaf Doessel
- 66-140 **Assessment of Different Methodologies to Include Temporal Information in Classifying Episodes of Sleep Apnea Based on Single-Lead Electrocardiogram**
Tim Willemen*, Carolina Varon, Bart Haex, Jos Vander Sloten and Sabine Van Huffel
- 67-308 **An Onchip Robust Real-time Automated Non-invasive Cardiac Remote Health Monitoring Methodology**
Naresh Vemishetty, Krishna Bharadwaj Chivukula, Sandeep Tiwari, Pavana Ravi Sai Kiran Malyala, Bastin Joseph, Agathya Jagirdar, Jagadish Bandaru, Venkateswara Chowdary, Sivakrishna Y, Amit Acharyya*, Rajalakshmi Pachamuthu and Paolo Emilio Puddu
- 68-333 **Economic Effect of Telecare on Medical Expenditures of Patients with Chronic Diseases**
Masatsugu Tsuji* and Yuji Akematsu

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S51: Challenge I

Room: Grand Ballrom A

Chair(s): Riccardo Barbieri and Ikaro Silva

- 69-380 **Robust Detection of Heart Beats in Multimodal Data: The PhysioNet/Computing in Cardiology Challenge 2014**
George B Moody*, Benjamin E Moody and Ikaro Silva
- 70-159 **Heart Rate Variability Discovery: Algorithm for Detection of Heart Rate from Noisy, Multimodal Recordings**
Jan Jakub Gierałtowski*, Kamil Ciuchciński, Iga Grzegorzczuk, Katarzyna Końska, Mateusz Soliński and Piotr Podziemski
- 71-192 **Heart Beat Detection in Multimodal Data Using Signal Recognition and Beat Location Estimation**
Thomas De Cooman*, Griet Goovaerts, Carolina Varon, Devy Widjaja and Sabine Van Huffel
- 72-160 **Multimodal Information Fusion for Robust Heart Beat Detection**
Quan Ding*, Yong Bai, Yusuf Erol, Rebeca Salas-Boni, Xiaorong Zhang, Lei Li and Xiao Hu
- 73-188 **Predicting Heart Beats using Co-occurring Constrained Sequential Patterns**
Shameek Ghosh*, Mengling Feng, Hung Nguyen and Jinyan Li
- 74-324 **PhysioNet/CinC Challenge 2014: A Noise Robust Method for Recognizing the Heart Beats in Multimodal Data**
Ali Ghaffari, Seyyed Abbas Atyabi* and Mohammad Javad Mollakazemi
- 75-70 **Rhythm-based Accuracy Improvement of Heart Beat Detection Algorithms**
Zoltán Gilián*, Péter Kovács and Kaveh Samiee

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- 76-76 **Identification of a Signal for an Optimal Heart Beat Detection in Multimodal Physiological Datasets**
Johannes W Krug*, Roman Schulte and Georg Rose
- 77-60 **Robust Algorithm to Locate Heart Beats from Multiple Physiological Waveforms**
Lars Johannesen*, Jose Vicente, Christopher Scully, Lorian Galeotti and David Strauss
- 78-112 **R Peak Estimation using Multimodal Lead Switching**
Alistair E W Johnson*, Joachim Behar, Julien Oster and Gari D Clifford
- 79-94 **Robust Detection of Heart Beats in Multimodal Data Using Integer Multiplier Digital Filters and Morphological Algorithms**
Urska Pangerc and Franc Jager*

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S52: Blood Pressure Systems

Room: Grand Ballroom B

Chair(s): Roberto Sassi and Madalena Costa

- 80-78 **Respiratory Rate Effect in the Power of Pulse
Photoplethysmogram Derived Respiration Signals**
Jesús Lázaro*, Raquel Bailón, Pablo Laguna, Ki Chon, Yunyoung
Nam and Eduardo Gil
- 81-8 **Performance of the Low-frequency Power of the Maximal
Value of the First Derivative of Arterial Pressure Waveform
as a Sympathetic Activity Index**
Salvador Carrasco-Sosa and Alejandra Guillén-Mandujano*
- 82-310 **Sleep Stage Classification in Children Using
Photoplethysmogram Pulse Rate Variability**
Parastoo Dehkordi*, Ainara Garde, Walter Karlen, David
Wensley, J Mark Ansermino and Guy A Dumont
- 83-344 **Characterization of Pulse Transit Time and
Photoplethysmogram Amplitude Dynamics in Sleep Apnea**
Aziz El-Tatar, Delphine Feuerstein, Laurence Graindorge, Guy
Carrault*, Amel Amblard, Jean-Louis Pépin and Alfredo
Hernández
- 84-238 **Changes in Short-Term Blood Pressure Regulation in
Adolescents with Type-I Diabetes Mellitus and Essential
Hypertension**
Eva Zavodna*, Zuzana Novakova, Magdalena Rohanova, Jana
Stastna, Natasa Honzikova, Ludmila Brazdova and Hana Hrstkova
- 85-41 **Monitoring Arterial Blood Pressure Fluctuations during
Hemorrhage**
Christopher G Scully*, George C Kramer and David G Strauss

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S53: Cardiovascular Ultrasound

Room: Skyline A

Chair(s): Nico Bruining and Tanveer Syeda Mahmood

- 86-228 **Automatic Detection of Left Ventricular Cardiac Aneurysms in Echocardiograms**
Raziuddin Mahmood, Quan Wang and Tanveer Syeda-Mahmood*
- 87-261 **CAPSU: a Completely Automated Method for Carotid Plaques Segmentation in Ultrasound Images**
Francesca Galluzzo*, Cristiana Corsi, Carmela Morizzo, Luca De Marchi, Nicola Testoni, Nicolò Speciale and Guido Masetti
- 88-263 **Near-Automated Quantification of Prenatal Aortic Intima-Media Thickness from Ultrasound Images**
Giacomo Tarroni*, Silvia Visentin, Erich Cosmi and Enrico Grisan
- 89-353 **Anatomical Structure Labeling in Apical Four-Chamber View Echocardiogram Images**
Yu Cao*, Colin Compas, Hongzhi Wang and Tanveer Syeda-Mahmood
- 90-376 **Necrotic Tissue Distribution Analysis: Preliminary Investigation for Reducing Necrosis Overestimation in Intravascular Ultrasound Virtual Histology Images**
Fernando J R Sales*, Breno A A Falcao, Joao L A A Falcao, Sergio S Furuie and Pedro A Lemos

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P61: ECG Methods

Room: Grand Ballroom Lobby

- 91-278 **Optimized Modelling of Maternal ECG Beats Using the Stationary Wavelet Transform**
Fernando Andreotti*, Hagen Malberg and Sebastian Zaunseder
- 92-54 **Estimation of Atrial Fibrillatory Frequency by Spectral Subtraction of Wavelet Denoised ECG in Patients with Atrial Fibrillation**
Jonathan Goodfellow*, Omar J Escalona, Philip R Walsh, Vivek Kodoth and Ganesh Manoharan
- 93-20 **Morphology-based QT Interval Measurement Using Frame-based Representation of ECG Signal**
Alireza Ghodrati* and Abbas Babajani-Feremi
- 94-19 **Wave Sequence Based Identification of Sinus Rhythm Beats on a Microcontroller**
Alexander Noack*, Rüdiger Poll and Wolf-Joachim Fischer
- 95-284 **A Signal Decomposition Approach to Morphological Modeling of P-wave**
Ebadollah Kheirati Roonizi and Roberto Sassi*
- 96-191 **Reducing ECG Alarm Fatigue Based on SQI Analysis**
Zehui Sun*, Jianwei Su, Chaocheng Xie, Jiao Yu, Wenyu Ye and Shen Luo
- 97-53 **Classification of Supraventricular and Ventricular Beats by QRS Template Matching and Decision Tree**
Vessela Krasteva, Remo Leber, Irena Jekova, Ramun Schmid and Roger Abächerli*
- 98-86 **Respiratory Rate Estimation from Multi-Lead ECGs using an Adaptive Frequency Tracking Algorithm**
Leila Mirmohamadsadeghi* and Jean-Marc Vesin

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- 99-154 **QRS Detectors Performance Comparison in Public Databases**
Mariano Llamedo* and Juan Pablo Martínez
- 100-82 **An Algorithm for the Detection of ST Segment Elevation Relating to Induced Ischemia in Body Surface Potential Maps**
Dewar Finlay*, Daniel Guldenring, Raymond Bond and Michael Daly
- 101-190 **Trend Strips: a New Tool to Analyze RR Time Series**
Antônio Carlos Silva Filho, Fátima Maria Helena Simões Pereira da Silva*, Júlio Cesar Crescêncio and Lourenço Gallo Júnior
- 102-75 **Morphological Analysis on Single Lead Contactless ECG Monitoring based on Beat-template**
Jesús Hernández-Ortega*, Francisco-Javier Gimeno-Blanes, Jose-Luis Rojo-Álvarez, Rafael Maestre-Ferriz, Jose-María López-Ayala, Juan-Ramón Gimeno-Blanes, Arcadi García-Alberola, Andrés-Lorenzo Bleda-Tomás and Jose-Antonio Flores-Yepes
- 103-30 **Internet based ST Map Software: A Web Service, a Decision Support System and an Educational Tool**
Raymond Bond*, Dewar Finlay and Daniel Guldenring

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P62: ECG Repolarization

Room: Grand Ballroom Lobby

- 104-65 **Normal Ventricular Repolarization Dispersion Range with Abrupt Heart Rate Changes**
Pablo Daniel Cruces, María Paula Bonomini, Marcos Javier Teperino, Ana Mincholé, Pablo Laguna and Pedro David Arini*
- 105-337 **Repolarization Effects of Sertindole Manifest as T-wave Flatness on the ECG**
Tanveer A Bhuiyan*, Claus Graff, Jørgen K Kanters, Jimmi Nielsen and Johannes J Struijk
- 106-356 **Changes in the ST- and Ventricular Gradient Vectors over a Period of 20 Years**
Marjolein De Jongh, C Cato Ter Haar, Sumche Man, Maurits Van der Heide, Roderick Treskes*, Arie C Maan, Martin J Schalijs and Cees A Swenne
- 107-222 **Valuation of an Index Which Estimate the Heterogeneity of Ventricular Repolarization (V-index) by BSPM and Application to Patients with Early Repolarization Syndrome**
Paola De Marco* and Irene Rossi
- 108-177 **Lack of Specificity of the Moving Average Method for Detecting Alternans**
David Mortara*
- 109-389 **The Accuracy of the EASI Derived Spatial QRS-T Angle**
Daniel Guldenring*, Dewar Finlay, Raymond Bond, Alan Kennedy and James McLaughlin

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P63: Clinical Aspects of ECG

Room: Grand Ballroom Lobby

- 110-229 **Electrocardiographic Abnormalities in Hypertrophic Cardiomyopathy**
Ana Mincholé*, Rina Ariga, Stefan Neubauer, Hugh Watkins and Blanca Rodriguez
- 111-375 **Low Level and High Frequency Fragmentation of the QRS Changes During Acute Myocardial Ischemia in Patients with and without Prior Myocardial Infarction**
Pedro Gomis* and Pere Caminal
- 112-58 **Assessing the Accuracy of Limited Lead Recordings for the Detection of Atrial Fibrillation**
Kerri Griffiths, Elaine Clark, Brian Devine* and Peter Macfarlane
- 113-1 **QRS and T Loops Area Changes During Haemodialysis**
Iana Simova, Ivaylo Christov*, Liliana Kambova, Giovanni Bortolan and Tzvetana Katova
- 114-37 **Left Ventricular Hypertrophy Index based on a Combination of Frontal and Horizontal Planes in the ECG and VCG: Diagnostic Utility of Cardiac Vectors**
María Paula Bonomini, Fernando Ingallina, Valeria Barone, Max Valentinuzzi and Pedro David Arini*
- 115-130 **The Loss of Multifractality as Evidence of Impaired Left Ventricular Ejection Fraction in Patients after Acute Myocardial Infarction**
Fátima Maria Helena Simões Pereira da Silva*, Antonio Carlos da Silva Filho, Julio Cesar Crescencio, Valéria Papa and Lourenço Gallo Júnior

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P64: Nonlinear Analysis of Heart Rate Variability

Room: Grand Ballroom Lobby

116-318 Extended Parabolic Phase Space Mapping (EPPSM): The Novel Quadratic Function for Representation of Heart Rate Variability Signal

Sadaf Moharreri*, Nader Jafarnia Dabanloo and Saman Parvaneh

117-193 HRV Spectral and Fractal Analysis in Heart Failure Patients with Different Aetiologies

Elisa Fornasa*, Agostino Accardo, Martino Cinquetti, Marco Merlo and Gianfranco Sinagra

118-303 The analysis of human heart rate for healthy and ill patients using the recently published method Multiscale Multifractal Analysis

Dorota Kokosińska*, Jan Gierałtowski, Jan Żebrowski, Rafał Baranowski and Ewa Orłowska - Baranowska

119-205 Time-domain, Frequency Domain and Non-linear Measurements in Infant's Heart Rate Variability with Clinical Sepsis

E Godoy, J Lopez, L Bermudez, A Ferrer, N Garcia, C Garcia Vicent, EF Lurbe and J Saiz*

120-247 Nonlinear Features of Neonatal Heart Rate Dynamics

Barbora Czipelova*, Lenka Chladekova, Zuzana Turianikova, Ingrid Tonhajzerova, Kamil Javorka, Zuzana Uhrikova, Mirko Zibolen and Michal Javorka

121-56 Continuous Information Extraction from Blood Pressure Data Using Reconstruction of Attractors

Philip Aston*, Manasi Nandi, Mark Christie and Ying Huang

122-153 Analysis of Maternal-Fetal Heart Rate Coupling with High Resolution Joint Symbolic Dynamics

Ahsan Khandoker, Andreas Voss*, Steffen Schulz, Miyuki Endo, Yoshitaka Kimura and Marimuthu Palaniswami

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123-272 Recurrence Quantification Analysis of Heart Rate and Blood Pressure Variability in Obese Children and Adolescents

Zuzana Turianikova*, Ingrid Tonhajzerova, Barbora Czippelova, Kamil Javorka, Zuzana Lazarova and Michal Javorka

124-110 Multiscale Cardiovascular Autonomic Modulation Following Treatment in Patients with Anorexia Nervosa

Herbert F Jelinek*, David J Cornforth, Sera P Lam, Janice Russell and Ian Spence

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P65: Informatics

Room: Grand Ballroom Lobby

- 125-327 **An Android Application for ECG Processing**
Rene Ivan Gonzalez-Fernandez* and Margarita Mulet-Cartaya
- 126-341 **Design and Optimization of an ECG Holter Hybrid System for Mobile Systems based on DSPIC**
Flavio Pineda-López*, Andrés Martínez-Fernández, José Luis Rojo-Álvarez and Manuel Blanco-Velasco
- 127-46 **Analysis of Heart Rate Changes in Newborns to Investigate the Effectiveness of Bag-Mask Ventilation**
Huyen Vu*, Trygve Eftestøl, Kjersti Engan, Joar Eilevstjønn, Jørgen Linde and Hege Ersdal
- 128-233 **Proof of Concept for an International Long-time Preservation ECG format**
Roberto Sassi*, Luca Sparagino, Norman L Stockbridge, Juan Guadiana and Fabio Badilini
- 129-21 **Encoding the Electrocardiogram Details in the Host Record's Bandgap for Authorization-Dependent ECG Quality**
Piotr Augustyniak*
- 130-158 **A Low-Cost Solution to Follow the Evolution of Arrhythmic Patients**
Rene Gonzalez-Fernandez*, Margarita Mulet-Cartaya, Juan Dayron Lopez-Cardona, Alejandro Lopez-Reyez, Rolando Lopez-Rodriguez and Rolando Lopez-Creagh
- 131-34 **Telemedicine Network for Collaborative Diagnosis and Care of Heart Malformations**
Alessandro Taddei*, Andrea Gori, Tiziano Carducci, Giuseppe Augiero, Alessio Ciregia, Emiliano Rocca, Giacomo Piccini, Nadia Assanta, Giorgio Ricci and Bruno Murzi

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- 132-163 **Telemedical Human Activity Monitoring System based on a Wearable Sensors Network**
Eliasz Kańtoch*
- 133-207 **Effect of Telehealth on Self-Care Behavior of Heart Failure Patients**
Carolina Varon*, Jan Minter, Michelle Stapleton, Stuart Thomson, Siegfried Jacques, Hans-Peter Brunner-La-Rocca and Sabine Van Huffel
- 134-108 **Optimization of Shifts and On-Call Coverage of Cardiologists Working in a Hospital Complex Structure by Using Free Software**
Eugenio Cervesato*, Giovanni Righini, Gian L Rellini, Matteo Cassin, Rita Piazza and Gian L Nicolosi
- 135-379 **European Patient Summary Guideline and Continuity of Care Document: A Comparison**
Ana Estelrich, Harold Solbrig, Marcello Melgara, Giorgio Cangiolli and Catherine Chronaki*
- 136-230 **Automated Measurement of Fetal Isovolumic Contraction Time from Doppler Ultrasound Signal without Using Fetal Electrocardiography**
Faezeh Marzbanrad*, Yoshitaka Kimura, Miyuki Endo, Marimuthu Palaniswami and Ahsan H Khandoker
- 137-262 **Assessment of Dynamic Autonomic Changes with Posture using Instantaneous Entropy Measures**
Gaetano Valenza*, Luca Citi, Enzo Pasquale Scilingo and Riccardo Barbieri
- 138-253 **Heart Murmur Detection Using Ensemble Empirical Mode Decomposition and Derivations of the Mel-Frequency Cepstral Coefficients on 4-Area Phonocardiographic Signals**
Joe A Jimenez, Miguel A Becerra* and Edilson Delgado-Trejos

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139-134 Towards Semantic Interoperability for Cardiovascular Risk Stratification into the Electronic Health Records Using Archetypes and SNOMED-CT

Alfonso Sanchez-Cano, Cristina Soguero-Ruiz, Inmaculada Mora-Jiménez, Luis Lechuga, Javier Ramos-Lopez, Arcadi García-Alberola, Pablo Serrano-Balazote and José Luis Rojo-Álvarez*

140-38 Clinical Decision Support System for Post-Procedure Management of Transcatheter Aortic Valve Replacement

Stefan Nelwan*, Mark Ronkes, Jeroen van den Berg and Teus van Dam

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P66: Tools for Simulation and Modelling

Room: Grand Ballroom Lobby

- 141-258 **New Algorithm to Identify Focus of Atrial Ectopic Activity from Multi-lead ECG Systems – Insights from 3D Virtual Human Atria and Torso**
Erick Andres Perez Alday, Michael A Colman*, Philip Langley and Henggui Zhang
- 142-323 **Huge Reduction of Defibrillation Thresholds using Four Electrode Defibrillators**
Ana Simic*, Inma R Cantalapiedra, Jorge Elorza and Jean Bragard
- 143-348 **Quantitative Insights into the Closed-loop Cardiovascular System Using an Electrical Lumped Element Physiological Model**
Athanasios Tsanas*, Gari Clifford, Vassiliki Vartela and Petros Sfirakis
- 144-311 **Modeling of the Human Heart Rate Variability Enhanced Using Stochastic Sleep Architecture Properties**
Mateusz Solinski*, Jan Gieraltowski and Jan Zebrowski
- 145-104 **A simple 2D Whole Heart Model for simulating Electrocardiogram**
Minimol Balakrishnan*, V Srinivasa Chakravarthy and Soma Guhathakurta
- 146-257 **Parameter Sensitivity Analysis of a Human Atrial Cell Model using Multivariate Regression**
Eugene TY Chang* and Richard H Clayton
- 147-13 **Detection of Abnormal Cardiac Activity using Principal Component Analysis**
Ariel Greisas* and Sharon Zlochiver

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- 148-185 **Quantifying Tikhonov Regularization Uncertainty in the Inverse Problem of Electrocardiography**
Jessie J France*, Yaniv Gur, Robert M Kirby and Chris R Johnson
- 149-178 **How Accurately Can Cardiac Conductivity Values Be Determined From Heart Potential Measurements?**
Barbara Johnston* and Peter Johnston
- 150-245 **Accuracy of Inverse Solution Computation of Dominant Frequencies and Phases during Atrial Fibrillation**
J Pedron-Torrecilla, AM Climent, A Liberos, M Rodrigo*, E Perez-David, J Millet, F Fernandez-Aviles, O Berenfeld and MS Guillem
- 151-173 **Fecgsyn: A Graphical User Interface for the Simulation of Maternal-Foetal Activity Mixtures on Abdominal Electrocardiogram Recordings**
Mohsan Alvi*, Joachim Behar, Fernando Andreotti, Julien Oster and Gari D Clifford
- 152-125 **Correlation Dimension as a Measure of the AF Capture during Atrial Septal Pacing**
Adrian Luca* and Jean-Marc Vesin

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S71: Challenge II

Room: Grand Ballroom A

Chair(s): Franc Jager and Ikaro Silva

- 153-399 **Robust Detection of Heart Beats in Multimodal Data: The PhysioNet/Computing in Cardiology Challenge 2014 (II)**
George B Moody, Benjamin E Moody and Ikaro Silva*
- 154-147 **PhysioNet/CinC Challenge**
Abid K and Deepu Vijayasenan*
- 155-97 **Fusion of Multimodal Physiological Signals using Cepstrum Analysis for Robust Heart Beat Detection**
Yongwei Zhu*
- 156-319 **Robust ECG Beat Detection in Multimodal Data**
Mahdi Bazarghan, Ruhallah Amandi, Ahmad Marofkhani* and Mohammad Farhadi
- 157-293 **PhysioNet/CinC Challenge 2014: The Noise Robust Method for Beat Detection in Continuous long-term Electrocardiogram Signal and Blood Pressure Signal**
Hamid Ebrahimi Orimi*
- 158-181 **Hidden Semi-Markov Model-based Heartbeat Detection using Multimodal data and Signal Quality Indices**
Marco Pimentel, Mauro Santos, David Springer* and Gari Clifford
- 159-126 **Robust Multichannel QRS Detection**
Filip Plesinger*, Juraj Jurco, Josef Halamek and Pavel Jurak
- 160-152 **Heuristic Algorithm for Multiparametric Beat Detection**
Jesús Presedo*, Constantino A García, Daniel Castro, Tomás Teijeiro, Abraham Otero and Paulo Félix
- 161-84 **Heart Beat Detection Method with Estimation of Regular Intervals between ECG and Blood Pressure**
Jongmin Yu, Taegyun Jeon* and Moongu Jeon

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162-200 Robust Detection of Heart Beats Using ECG, BP and EEG Signals

Soo-Kng Teo, Bo Yang, Bart Hoeben, Dong Huang, Monterola Christopher and Yi Su*

163-137 PhysioNet/CinC Challenge

Sachin Vernekar and Deepu Vijayasenan*

164-33 Robust Detection of Heart Beats using Dynamic Thresholds and Moving Windows

Marcus Vollmer*

165-68 Heart Beat Detection in Multimodal Data via Information Synthesis

Henian Xia*, Raj Baljepally and Xiaopeng Zhao

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S72: ECG Waveform Quality and Detection I

Room: Grand Ballroom B

Chair(s): Shen Luo and Raymond Bond

- 166-52 **Lead Quality Monitoring for Detection of the Optimal Snapshot Time to Record Resting ECG**
Irena Jekova, Remo Leber, Vessela Krasteva, Ramun Schmid and Roger Abächerli*
- 167-199 **Study of ECG Quality using Self Learning Techniques**
Gianfranco Toninelli*, Alfonso Gerevini, Martino Vaglio and Fabio Badilini
- 168-102 **ECG Recording Sites for Improving Signal to Noise Ratio during Atrial Depolarisation**
Alan Kennedy*, Dewar Finlay, Daniel Guldenring and James McLaughlin
- 169-226 **New method for J-point Location in Subjects with Electrocardiographic Early Repolarization**
Jacob Melgaard*, Johannes J Struijk, Jørgen K Kanters, Samuel E Schmidt, Ask S Jensen, John Hansen, Tanveer A Bhuiyan and Claus Graff
- 170-14 **Automatic Real-Time Quality Assessment of a 12-Lead ECG Recording**
Reza Firoozabadi*, Rich Gregg, Beth Zengo and Saeed Babaeizadeh
- 171-360 **Serial ECG Analysis: Can we Detect Faulty ECG Recordings?**
Arie C Maan*, C Cato Ter Haar, Sumche Man, Roderick Treskes, Marjolein De Jongh, Maurits Van der Heide, Martin J Schalijs and Cees A Swenne

Tuesday, September 9, 2014, 14:15

S73: Nonlinear Analysis of Heart Rate Variability

Room: Skyline A

Chair(s): Olivier Meste and Pablo Laguna

172-269 Analysis of Non-linear Respiratory Influences on Sleep Apnea Classification

Alexander Caicedo*, Carolina Varon and Sabine Van Huffel

173-166 Rank-based Multi-Scale Entropy analysis of Heart Rate Variability

Luca Citi*, Giulia Guffanti and Luca Mainardi

174-167 A Methodological Assessment of Phase-Rectified Signal Averaging through Simulated Beat-to-Beat Interval Time Series

Massimo W Rivolta, Tamara Stampalija, Daniela Casati, Enrico Ferrazzi, Axel Bauer and Roberto Sassi*

175-291 QT-Interval Adaptation to Changes in Autonomic Balance

Ehimwenma Nosakhare*, George Verghese, Robert Tasker and Thomas Heldt

176-103 Separating Respiratory Influences from the Tachogram: Methods and their Sensitivity to the Type of Respiratory Signal

Devy Widjaja*, Carolina Varon, Dries Testelmans, Bertien Buyse, Luca Faes and Sabine Van Huffel

177-370 Dynamic Network Interactions of the Cardiac System

Ronny P Bartsch, Amir Bashan, Kang KL Liu, Chunhua Bian, Gustavo Zampier dos Santos Lima and Plamen CH Ivanov*

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S74: Classification of CV Signals

Room: Skyline C

Chair(s): Piotr Augustyniak and Philip Warrick

**178-179 Robust Heart Rate Estimation from Noisy
Phonocardiograms**

David Springer*, Thomas Brennan, Jens Hitzerth, Bongani
Mayosi, Lionel Tarassenko and Gari Clifford

**179-347 A Novel Technique for Analyzing Noisy Noninvasive Fetal
Electrocardiogram Signals**

Mohammad Javad Mollakazemi, Seyyed Abbas Atyabi* and Ali
Ghaffari

**180-22 Subject-Optimized Feature Selection for Accurate
Classification of Cardiac Beats**

Piotr Augustyniak*

181-215 Evaluation of FHR Recordings based on Clustering

Václav Chudáček*, Jiří Spilka and Tereza Janíčková

**182-175 Support Vector Machine Hidden Semi-Markov Model-
based Heart Sound Segmentation**

David Springer*, Lionel Tarassenko and Gari Clifford

Tuesday, September 9, 2014, 16:15

S81: Ischemia and Infarction

Room: Grand Ballroom A

Chair(s): Goran Krstacic and Cees Swenne

183-350 Acute Ischemia Detection using a QRS Angle-based Method

Daniel Romero*, Juan Pablo Martínez, Pablo Laguna and Esther Pueyo

184-352 Serial ECG Analysis for Ischemia Detection: How Representative Is a Reference ECG?

Roderick Treskes*, C Cato Ter Haar, Sumche Man, Marjolein De Jongh, Maurits van der Heide, Arie C Maan, Martin J Schalijs and Cees A Swenne

185-141 Improving Automatic Detection of Acute Myocardial Infarction in the Presence of Confounders

Richard Gregg* and Saeed Babaeizadeh

186-368 A Real-time ST-segment Monitoring Algorithm based on a Multi-channel Waveform-length-transformation Method for Q-onset and J-point Selection

Wei Zong*, Scott Kresge, Haisheng Lu and John Wang

187-244 Wavelet Based Method For Localization Of Myocardial Infarction Using Vector Electrocardiogram

Nader Jafarnia Dabanloo, Azadeh Nooriyan and Saman Parvaneh*

Tuesday, September 9, 2014, 16:15

S82: Fibrillation and Tachyarrhythmia

Room: Grand Ballroom B

Chair(s): Guy Carrault and José Rojo

188-107 A Platform to guide Catheter Ablation of Persistent Atrial Fibrillation using Dominant Frequency Mapping

Xin Li*, João Loures Salinet, Tiago Paggi de Almeida, Frederique Jos Vanheusden, Gavin S Chu, G André Ng and Fernando S Schindwein

189-161 Spatiotemporal Behaviour of High Dominant Frequency during Persistent Atrial Fibrillation

Nawshin Dastagir*, Joao L Salinet, Frederique J Vanheusden, Tiago P Almeida, Xin Li, Gavin S Chu, Andre G Ng and Fernando S Schindwein

190-335 Distinctive Patterns of Dominant Frequency Trajectory Behaviour in Persistent Atrial Fibrillation: Spatio-temporal Characterisation

Joao Salinet*, Jiun Tuan, Angela Salinet, Xin Li, Peter Stafford, G Andre Ng and Fernando Schindwein

191-31 Detection of Atrial Fibrillation Using Contactless Facial Video Monitoring

Jean-Philippe Couderc*, Survi Kyal, Lalit Mestha, Beilei Xu, Derick Peterson, Xiaojuan Xia and Burr Hall

192-115 Towards Impedance Optimised Transcutaneous Atrial Defibrillation

Philip R Walsh*, Paola A Rodrigues, Niall Watermann, David McEneaney and Omar J Escalona

193-366 Specific Patterns of Premature Beats Tend to Initiate Ventricular Tachyarrhythmias in Human Patients

Anna RM Gelzer, Robert F Gilmour Jr and Niels F Otani*

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S83: Ventricular Modelling

Room: Skyline A

Chair(s): Flavio Featon and Henggui Zhang

194-131 A Computational Investigation into the Effect of Infarction on Clinical Human Electrophysiology Biomarkers

Louie Cardone-Noott*, Alfonso Bueno-Orovio, Ana Mincholé, Kevin Burrage, Mikael Wallman, Nejib Zemzemi, Erica Dall'Armellina and Blanca Rodriguez

195-172 Inverse Estimation of Left Ventricular Purkinje Network Pathways from Sequence of Depolarization

Ruben Cardenes, Rafael Sebastian*, Oscar Camara and Antonio Berruezo

196-265 Sensitivity Study of Fiber Orientation on Stroke Volume in the Human Left Ventricle

Lukas Baron*, Thomas Fritz, Gunnar Seemann and Olaf Dössel

197-377 Modeling the Takeoff Voltage of the Action Potential during Fast Pacing

Diandian Chen*, Richard Gray and Flavio Fenton

198-354 Verification of a Defibrillation Simulation Using Internal Electric Fields in a Human Shaped Phantom.

Jess Tate*, Thomas Pilcher, Kedar Aras, Brett Burton and Rob MacLeod

199-343 Quantitative Analysis of Rate Dependent of Human Heart Failure Action Potential Model on Alternans Onset and Arrhythmias

Mohamed Elshrif*, Elizabeth Cherry and Pengcheng Shi

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S84: 3D Imaging

Room: Skyline C

Chair(s): Rob MacLeod and Cristiana Corsi

200-239 Automatic Extraction of Arterial Centerline from Whole-body Computed Tomography Angiography

Xinpei Gao*, Shengxian Tu, Michiel de Graaf, Liang Xu, Pieter Kitslaar, Arthur Scholte, Bo Xu and Johan Reiber

201-365 Fusion Imaging of Computed Tomography and 3D Echocardiography: Combined Assessment of Coronary Anatomy and Myocardial Function

Francesco Maffessanti*, Karima Addetia, Gillian Murtagh, Lynn Weinert, Amit Patel, Roberto Lang and Victor Mor-Avi

202-187 Automatic Correction of Motion Artifacts in 4D Left Ventricle Model Reconstructed from MRI

Yi Su*, May-Ling Tan, Chi-Wan Lim, Soo-Kng Teo, Senthil Kumar Selvaraj, Liang Zhong and Ru-San Tan

203-338 3D Echocardiographic Quantification of Ejection Fraction and Cardio-toxicity Onset

Cinzia Lorenzini*, Michele Aquilina, Claudio Lamberti and Cristiana Corsi

204-361 Temporal Sparse Promoting Three Dimensional Imaging of Cardiac Activation

Long Yu*, Zhaoye Zhou and Bin He

205-294 An Iterative method for solving the inverse problem in Electrocardiography imaging : From body surface to heart potential

Nejib Zemzemi*, Hamed Bourenane and Hubert Cochet

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S91: ECG Waveform Quality and Detection II

Room: Grand Ballroom A

Chair(s): Eric Helfenbein and Ivaylo Christov

- 206-40 **A Pattern-Recognition Approach for Lead-Selection in Heartbeat Detection**
Mariano Llamedo*, Juan Pablo Martínez and Pablo Laguna
- 207-224 **Adaptive Beat-to-Beat Mathematical Morphology Approach for QRS detection in the ECG**
Sasan Yazdani* and Jean-Marc Vesin
- 208-23 **An Adaptive Heart-beat Classification System Based on Learning from Difficult Cases**
Philip de Chazal*
- 209-55 **A Real-time QRS Detector Based on Higher-order Statistics for ECG Gated Cardiac MRI**
Marcus Schmidt, Johannes W Krug*, Andreas Gierstorfer and Georg Rose
- 210-196 **QRS Detection Optimization in Stress Test Recordings using Evolutionary Algorithms**
David Hernando*, Raquel Bailón, Rute Almeida and Alfredo Hernández
- 211-339 **A Vector-based Pace Pulse Detection Algorithm for the surface ECG**
Simon C Chien*, Po-Cheng Chang, Hong-Ta Wo, Eric Helfenbein, Chun-Chieh Wang and Ming-Shien Wen

Wednesday, September 10, 2014, 08:15

S92: Atrial Fibrillation Modelling

Room: Skyline A

Chair(s): Adrian van Oosterom and Gunnar Seemann

- 212-35 **Optimization of Pharmacotherapy for Familial Atrial Fibrillation in a Numerical Model of Human Atrial Electrophysiology**
Axel Loewe*, Yannick Lutz, Mathias Wilhelms, Eberhard P Scholz, Olaf Dössel and Gunnar Seemann
- 213-36 **Atrial Spiral Wave Drifting Under Applied Spatial Temperature Gradients**
Guy Malki* and Sharon Zlochiver
- 214-50 **A Simulation Study of Electrotonic Coupling between Human Atrial Myocytes and Mechanosensitive Fibroblasts**
Honglian Su, Heqing Zhan, Yinglan Gong, Dingchang Zheng* and Ling Xia
- 215-202 **Accurate Characterization of Rotor Activity during Atrial Fibrillation Depends on the Properties of the Multi-electrode Grid**
Laura Martinez, Lucia Romero, Catalina Tobon, Jose M Ferrero, Jose Jalife, Omer Berenfeld and Javier Saiz*
- 216-296 **Constructing Human Atrial Electrophysiological Models Mimicking a Patient-Specific Cell Group**
Anna Muszkiewicz*, Alfonso Bueno-Orovio, Xing Liu, Barbara Casadei and Blanca Rodriguez
- 217-266 **Evaluating Effects of Fibrosis on Atrial Re-entry Using 3D Computational Modelling**
Ross Morgan*, Michael Colman, Martin Kruger, Gunnar Seemann, Kawal Rhode and Oleg Aslanidi

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S93: Pathology of Heart Rate Variability

Room: Grand Ballroom B

Chair(s): Valentina Corino and Andreas Voss

218-162 Age- and Gender-related Shift in Cardiovascular Variability in Healthy Volunteers

Hagen Malberg*, Hendrik Bonnemeier, Andreas Müller, Sebastian Zaunseder and Niels Wessel

219-282 Causality of Heart Rate – Blood Pressure Interactions during Mental and Orthostatic Stress

Michal Javorka*, Barbora Czippelova, Lenka Chladekova, Zuzana Turianikova, Zuzana Visnovcova, Zuzana Lazarova, Kamil Javorka and Ingrid Tonhajzerova

220-26 Heart Rate Variability Associated with Different Modes of Lower Abdominal Muscle Tension during Zen Meditation

Masaki Hoshiyama* and Asagi Hoshiyama

221-88 Impacts of labour first and second stages on Hurst parameter based intrapartum fetal Heart Rate analysis

Jiri Spilka*, Patrice Abry, Paulo Goncalves and Muriel Doret

222-357 Phase Transitions in Independent Forms of Cardio-Respiratory Coupling across Sleep Stages

Ronny P Bartsch, Kang KL Liu, Qianli DY Ma and Plamen CH Ivanov*

223-372 Time-Domain and Spectral Analysis of Heart Rate Variability in Rats Challenged with Hypoxia

Stanislaw Zajackowski*, Maria Smolinska, Piotr Badtke and Tomasz Wierzba

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S94: Miscellaneous Medical Informatics

Room: Skyline C

Chair(s): Gari Clifford and Peter Szolovits

224-10 CrowdLabel: A Crowd-sourcing Platform for Electrophysiology

Tingting Zhu*, Joachim Behar, Tasos Papastylianou and Gari D Clifford

225-301 Increasing the Dynamic Range of a Pulse Oximeter Using Heart Rate Characteristics

Chris J Brouse*, Ronald Gatzke, Daniel K Freeman and Yu Chen

226-312 Noise and Spatial-resolution effect of Electrode Array on Rotor Tip Location during Atrial Fibrillation: A Simulation Study

Miguel A Becerra*, Juan P Murillo, Laura C Palacio and Catalina Tobón

227-139 Risk Assessment of Atrial Fibrillation: a Failure Prediction Approach

Jelena Milosevic, Andreas Dittrich, Alberto Ferrante*, Miroslaw Malek, Camilo Rojas Quiros, Rubén Braojos, Giovanni Ansaloni and David Atienza

228-142 Multimodal Sensor Fusion of Cardiac Signals via Blind Deconvolution: A Source-Filter Approach

Christoph Hoog Antink*, Christoph Brüser and Steffen Leonhardt

229-392 A Data Driven Approach to Patient Cohort Identification

Thomas Brennan*, Marco Pimental, Mengling Feng, Li-Wei Lehman, Mohammad Ghassemi and Roger Mark

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SA1: Atrial Fibrillation I

Room: Grand Ballroom A

Chair(s): José Millet and Leif Sörnmo

230-317 Altered Nonlinear Dynamics of Atrial Fibrillation Detected After Ablation

Kevin Sunderland*, Adam Berman and Autumn Schumacher

231-77 A Novel P-wave Duration Estimation Method to Assess the Impact of the Hybrid Procedure for Atrial Fibrillation Ablation

Pietro Bonizzi*, Narendra Kumar, Stef Zeemering, Ralf Peeters and Laurent Pison

232-4 Atrial Fibrillation Substrate Characterization and Catheter Ablation Acute Outcome Prediction: Comparative Analysis of Spectral and Nonlinear Indices from Right Atrium Electrograms

Luigi Yuri Di Marco*, Daniel Raine, John P Bourke and Philip Langley

233-93 Modification of Atrioventricular Node Conduction Increases RR Variability but not RR Irregularity nor Atrial Fibrillation Rate in Atrial Fibrillation Patients

Valentina DA Corino*, Sara R Ulimoen, Steve Enger, Luca T Mainardi, Arnljot Tveit and Pyotr G Platonov

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SA2: Inverse Problem

Room: Skyline A

Chair(s): Dewar Finlay and Peter van Dam

234-250 Using a new Time-Independent Average Method for Non-Invasive Cardiac Potential Imaging of Endocardial Pacing with Imprecise Thorax Geometry

Jaume Coll-Font*, Burak Erem and Dana H Brooks

235-138 Localization of Three-Dimensional Sources in Cardiac Tissue Using Optical Mapping

Gwladys Ravon*, Yves Coudière, Angelo Iollo, Olivier Bernus and Richard D Walton

236-349 Noninvasive Identification of Three-dimensional Myocardial Infarctions from Inversely Reconstructed Equivalent Current Density

Zhaoye Zhou*, Chengzong Han and Bin He

237-305 Local Regularization of Endocardial and Epicardial Surfaces for better Localization of Ectopic Beats in the Inverse Problem of ECG

Danila Potyagaylo*, Walther Schulze and Olaf Dössel

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SA3: Blood Pressure and Peripheral Pulse

Room: Grand Ballroom B

Chair(s): Dingchang Zheng and Brian Anthony

238-81 Validation of a Blood Pressure Simulator that Regenerates Oscillometric Cuff Pressure Waveforms

Dingchang Zheng*, Chengyu Liu, John Amoore, Stephan Mieke and Alan Murray

239-259 Validation of a Smartphone-based Photoplethysmographic Beat Detection Algorithm for Normal and Ectopic Complexes

Lenn Drijkoningen, Frederic Lenaerts, Jo Van der Auwera, Christophe Smeets, Julie Vranken, Valerie Storms, Dieter Nuyens, Pieter Vandervoort and Lars Grieten*

240-123 Oscillometric Waveform Difference between Cuff Inflation and Deflation during Blood Pressure Measurement

Chengyu Liu*, Dingchang Zheng, Clive Griffiths and Alan Murray

241-220 Estimation of Respiratory Information from the Built-In Pressure Sensors of a Dialysis Machine

Frida Sandberg*, Mattias Holmer, Bo Olde and Kristian Solem

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SA4: Ionic Modelling in Ventricular Arrhythmia

Room: Skyline C

Chair(s): Javier Saiz and Jose Mario Ferrero

242-69 Pro-arrhythmic Effects of Increased Late Sodium Current In Failing Human Heart

Jieyun Bai*, Kuanquan Wang, Xiangyun Bai, Yongfeng Yuan and Henggui Zhang

243-351 Late Sodium Current Inhibition Counteracts Pro-arrhythmic Mechanisms in Human Hypertrophic Cardiomyopathy

Elisa Passini*, Alfonso Bueno-Orovio, Ana Mincholé, Raffaele Coppini, Elisabetta Cerbai, Stefano Severi and Blanca Rodriguez

244-279 Theoretical Study of the Role of Funny Current (If) and the Background Inward Current (Ib) in Atrioventricular Nodal Conduction

Jue Li* and Mark R Boyett

245-267 Effect of Inter-Subject Variability in Determining Response to IKr Block in Human Ventricular Myocytes

Oliver J Britton*, Alfonso Bueno-Orovio, Laszlo Virag, Andras Varro and Blanca Rodriguez

Wednesday, September 10, 2014, 11:30

SB1: Ischemic Modelling

Room: Grand Ballroom A

Chair(s): Stefan Nelwan and Daniel Guldenring

- 246-164 **Ischemia Alters Sensitivity of Action Potential to the Sodium-Potassium Pump**
Sanjay Kharche, Edward Vigmond, Michael Colman* and Henggui Zhang
- 247-101 **Dynamic Computational Simulations of Alternans in Acute Myocardial Ischemia**
Antonio Felix de Castro, Adriano Giovanni and Jose M Ferrero*
- 248-90 **Effects of Acute Myocardial Ischemia in Mathematical Models of Heterogeneous Myocardium**
Anastasia Vasilyeva*, Nathalie Vikulova, Olga Solovyova, Dmitry Zamaraev and Vladimir S Markhasin
- 249-234 **Metabolic but not Hypoxemic Stimuli are Related to the Apparent Recruitment of Capillaries in the Muscle**
Vito Starc*

Wednesday, September 10, 2014, 11:30

SB2: Atrial Fibrillation II

Room: Grand Ballroom B

Chair(s): Mariana Meo and Philip Langley

250-92 Non-invasive Evaluation of the Effect of Metoprolol on the Atrioventricular node during Permanent Atrial Fibrillation

Valentina DA Corino*, Frida Sandberg, Luca T Mainardi, Sara R Ulimoen, Steve Enger, Arnljot Tveit, Pyotr G Platonov and Leif Sörnmo

251-95 Principal Component Analysis of Body Surface Potential Mapping in Atrial Fibrillation Patients Suggests Additional ECG Lead Locations

Stef Zeemering*, Theo Lankveld, Pietro Bonizzi, Harry Crijns and Ulrich Schotten

252-79 Is it Possible to Detect Atrial Fibrillation by Simply Using RR Intervals?

Sándor Hargittai*

253-71 Joint Entropy for Spatial Information Retrieval from Orthogonal Heart Planes Improves Catheter Ablation Outcome Prediction in Persistent Atrial Fibrillation

Meo Marianna*, Vicente Zarzoso, Olivier Meste, Decebal G Latcu and Nadir Saoudi

Wednesday, September 10, 2014, 11:30

SB3: Apnea Detection and Cardio-respiratory Interactions

Room: Skyline A

Chair(s): Ary Goldberger and Carolina Varon

254-168 An approach to the enhancement of Sleep Apnea Detection by means of Detrended Fluctuation Analysis of RR intervals

Antonio Gabriel Ravelo García*, Ubay Casanova Blancas, Juan Luis Navarro Mesa, Sofía Martín González, Eduardo Hernández Pérez, Pedro Quintana Morales and Niels Wessel

255-42 Automated Detection of Obstructive Sleep Apnoea by Single-lead ECG through ELM Classification

Nadi Sadr* and Philip de Chazal

256-369 Development of Analytical Approach for an Automated Analysis of Continuous Long-Term Single Lead ECG for Diagnosis of Paroxysmal Atrioventricular Block

Muammar Kabir* and Larisa Tereshchenko

257-235 Transient Behavior of Cardiorespiratory Interactions towards the Onset of Epileptic Seizures

Carolina Varon*, Katrien Jansen, Lieven Lagae, Luca Faes and Sabine Van Huffel

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PC1: Imaging

Room: Grand Ballroom Lobby

258-334 In Vivo T2-mapping and Segmentation of Carotid Artery Plaque Components Using Magnetic Resonance Imaging at 1.5T

Bartosz Proniewski*, Tomasz Miszalski-Jamka and Przemysław Jaźwiec

259-99 Fusion of Edge Enhancing Algorithms for Atherosclerotic Carotid Wall Contour Detection in CTA

Florentino Luciano Caetano dos Santos*, Atte Joutsen, Juha Salenius and Hannu Eskola

260-237 Myocardium Segmentation Improvement with Anisotropic Anomalous Diffusion Filter Applied to Cardiac Magnetic Resonance Imaging

Antonio Carlos Senra Filho, Gustavo Barizon and Luiz Otávio Murta Junior*

261-221 Automated Algorithm for Computing Left Ventricle Volume Changes from Cine-MR Images

Soo-Kng Teo, Wan Min, Chi-Wan Lim, Liang Zhong, Ru-San Tan and Yi Su*

262-180 A Local Phase-Based Algorithm for Registration of CMR Scans from Multiple Visits

Christopher Kelly*, Stefan Neubauer, Robin Choudhury, Erica Dall'Armellina and Vicente Grau

263-45 Defining Angular and Radial Positions and Parameters for Myocardial Pixels in Cardiac MR Images

Kjersti Engan*, Leik Woie and Trygve Eftestøl

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- 264-242 **Tissue Characterization from Myocardial Perfusion and Autonomic Innervation using MRI and SPECT images in Chagas Disease**
Gustavo Barizon, Antonio Carlos Senra Filho*, André Schmidt, Marcus Vinicius Simões, Leonardo Gadioli and Luiz Otávio Murta Junior
- 265-252 **Variance stabilizing transformations in the reduction of Poisson noise in 3D Nuclear Medicine images**
Edward Flórez Pacheco* and Sergio Shiguemi Furuie
- 266-24 **Optical Ballistocardiography for Gating and Patient Monitoring during MRI: An Initial Study**
Johannes W Krug*, Falk Lüsebrink, Oliver Speck and Georg Rose
- 267-3 **Automatic Segmentation of Intravascular Ultrasound Images based on Temporal Texture Analysis**
Chi Hau Chen* and Adithya G Gangidi
- 268-133 **A New Method for Intraoperative Quantification of Mitral Leaflet Segment Prolapse**
Sandy Engelhardt*, Raffaele De Simone, Norbert Zimmermann, Matthias Karck, Hans-Peter Meinzer, Diana Nabers and Ivo Wolf
- 269-260 **Ambulatory Impedance Pneumography Device for Quantitative Monitoring of Volumetric Parameters in Respiratory and Cardiac Applications**
Marcel Młyńczak, Wiktor Niewiadomski, Marek Żyliński and Gerard Cybulski*
- 270-286 **The Application of Different Metrics of Signal Shape for Automatic Identification of Artifacts in Impedance Cardiography Traces**
Gerard Cybulski* and Piotr Piskulak

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PC2: System Studies

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- 271-388 **Antipsychotic Medication Influences Cardiovascular Coupling in Patients Suffering from Acute Schizophrenia**
Steffen Schulz*, Karl-Juergen Baer and Andreas Voss
- 272-326 **Study of Induced Emotion by Color Stimuli: Power Spectrum Analysis of Heart Rate Variability**
Sadaf Moharreri*, Nader Jafarnia Dabanloo and Saman Parvaneh
- 273-198 **In-vivo and Isolated Heart HRV Analysis by Hidden Markov Model**
Oto Janoušek*, Marina Ronzhina, Peter Scheer, Jana Kolářová, Ivo Provazník and Marie Nováková
- 274-345 **Detection of Electrocardiographic and Respiratory Signals Using a Wearable Transthoracic Bioimpedance Monitor for Improved Home-Based Disease Management in Congestive Heart Failure Patients**
Silviu Dovancescu* and Jarno Riistama
- 275-398 **Heart Rate Variability Analysis of Pre and Post-awakening of 10 Year Old Children**
Taher Biala*, Syamil Muhammad, Fernando Schindwein and Michael Wailoo
- 276-371 **Global Optimization Approaches for Parameter Tuning in Biomedical Signal Processing: A Focus of Multi-scale Entropy**
Mohammad Ghassemi*, Li-Wei Lehman and Shamim Nemati
- 277-145 **Heart Rate Variability in Ultra-Trail Runners**
*Umberto Melia, Montserrat Vallverdu, Emma Roca, Daniel Brotons, Alfredo Irurtia, Joan A Cadefau, Pere Caminal and Alexandre Perera (Alexandre Perera)

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278-385 Discrimination of Normal and At-Risk Populations from Fetal Heart Rate Variability

Philip A Warrick* and Emily F Hamilton

279-223 Investigation of Baroreflex Autonomic Control by Spectral Coherence of fMRI Independent Components and Neck Suction Stimulation Signal

Matteo Mancini*, Eugenio Mattei, Federica Censi, Barbara Basile, Marco Bozzali and Giovanni Calcagnini

280-214 Influence of Psychological Stress on QT Interval

Chandan Karmakar, Mohammad Hasan Imam*, Ahsan Khandoker and Marimuthu Palaniswami

281-11 Cardiac Autonomic Reinnervation Following Aorto-Coronary Bypass Evaluated by High Resolution Heart Rate Variability

Dimiter Simov, Maria Milanova, Mikhail Matveev, Vessela Krasteva and Ivaylo Christov*

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PC3: Simulation

Room: Grand Ballroom Lobby

- 282-287 **Linking a Novel Mutation to its Short QT Phenotype through Multiscale Computational Modelling**
Chiara Bartolucci, Cristina Moreno, Alicia de la Cruz, Pier Lambiase, Stefano Severi* and Carmen Valenzuela
- 283-273 **Ionic Mechanisms of Triggered Activity in Atrial Cell Models**
Marta Varela, Nooshin Ghavami, Stuart James, Ross Morgan* and Oleg Aslanidi
- 284-276 **Solution of the Bidomain Equations with a Composite Backward Differentiation Formula**
Wenjun Ying* and Craig Henriquez
- 285-195 **The Effect of Low Potassium in Brugada Syndrome. A Simulation Study**
Karen Cardona, Juan Francisco Gómez, Javier Saiz*, Wayne R Giles and Beatriz Trenor
- 286-176 **Simple Ablation Guided by Approximate Entropy Mapping in a 2D Atrial Fibrillation Model**
Catalina Tobón*, Laura C Palacio, Juan E Duque, Esteban A Cardona, Juan P Ugarte, Andrés Orozco-Duque, Miguel A Becerra, John Bustamante and Javier Saiz
- 287-212 **The Modified Bidomain Model with Periodic Diffusive Inclusions**
Andjela Davidovic*, Clair Poignard and Yves Coudiere
- 288-136 **Myocardial Electrophysiological, Contractile and Metabolic Properties of Hypertrophic Cardiomyopathy: Insights from Modelling**
Ismail Adeniran*, Gareth Jones and Henggui Zhang

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- 289-87 **Role of Fiber Orientation in Atrial Arrhythmogenesis**
Sanjay Kharche, Jichao Zhao, Simon Castro, Michael Colman*,
Robert Stevenson, Jonathan Jarvis, Bruce Smail and Henggui
Zhang
- 290-64 **Propagation Malfunctions due to Gap Junction
Dysregulation**
Inmaculada R Cantalapiedra*, Angelina Peñaranda and Blas
Echebarria
- 291-48 **Simulation of an Electro-mechanical Resuscitation Device
for Cardiopulmonary Resuscitation**
Alejandro Mendoza Garcia*, Stefan Eichhorn, Marcin Polski and
Alois Knoll
- 292-18 **Action Potential Abnormalities due to Loss- or Gain-of-
Function Mutations in KCNJ2**
Ronald Wilders*

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PC4: ECG Methods II

Room: Grand Ballroom Lobby

- 293-49 **Robust Derivative-Based Method to Determine Filtered QRS Limits in High Resolution Electrocardiography**
Olivassé Nasario-Junior, Paulo Benchimol-Barbosa and Jurandir Nadal*
- 294-106 **Assessment of Electrocardiograms with Pretraining and Shallow Networks**
Vicent Ribas Ripoll*, Anna Wojdel, Pablo Ramos, Enrique Romero and Josep Brugada
- 295-7 **Variability of the Maximal Amplitudes of Impedance Cardiography and of its First Derivative during Supine, Standing, Controlled Breathing, and Exercise**
Salvador Carrasco-Sosa and Alejandra Guillén-Mandujano*
- 296-328 **Post Extrasystolic T Wave Change in Subjects With Structural Healthy Ventricles - Measurement and Simulation**
Gustavo Lenis*, Yannik Lutz, Gunnar Seemann, Arcadi García-Alberola, José Luis Rojo-Álvarez, Oscar Baquero-Pérez, Eduardo Gil and Olaf Doessel
- 297-6 **Comparative Study of Signal Decomposition Methods for Enhancement of the Accuracy of T-wave End Localisation**
Ivaylo Christov*, Velislav Batchvarov, Iana Simova, Nikolay Dimitrov and Elijah Behr
- 298-330 **A Portable Device for a Modular System of Patient Monitoring**
Daniel Campillo*, Hector Torres, Rene Gonzalez, Katia Valdes and Rolando Lopez
- 299-2 **Cardiac Telemetry System Intended for Flexible Patient Monitoring**
Gay Meissimilly*, Mary Cartaya and Diolkis Ruiz

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300-307 Personalised System-on-chip for Standard 12-lead Reconstruction from the Reduced 3-lead System Targeting Remote Health Care

Utkalika Panda, Sidharth Maheshwari, Gayathri Padma, Murugaiyan Thendral, Agathya Jagirdar, Venkateswara Chowdary, Naresh Vemishetty, Amit Acharyya*, Paolo Emilio Puddu and Michele Schiariti

301-292 QRS Complex Detection in Experimental Orthogonal Electrograms of Isolated Rabbit Hearts

Jiří Kozumplík, Marina Ronzhina, Oto Janoušek, Jana Kolářová*, Ivo Provazník and Marie Nováková

302-61 High-frequency Noise Filtration in Stress Test ECG

Giovanni Bortolan and Ivaylo Christov*

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PC5: Clinical Aspects of ECG II

Room: Grand Ballroom Lobby

303-149 High Resolution ECG Differences between Hospital Survivors and Non-survivors of Out-of-Hospital Cardiac Arrest during Mild Therapeutic Hypothermia

Martin Rauber*, Dušan Štajer, Marko Noč, Todd Schlegel and Vito Starc

304-280 Susceptibility of Isolated Rabbit Hearts with various Left Ventricular Mass to Short Ischemic Periods

Veronika Olejnicková*, Marina Ronzhina, Hana Paulova, Miroslava Hlavacova, Tibor Stracina and Marie Novakova

305-288 Effects of Left Ventricle Enlargement on QRS of Rabbit Isolated Heart Electrogram

Marina Ronzhina*, Veronika Olejníčková, Oto Janoušek, Tibor Stračina, Tomáš Potočňák, Jana Kolářová, Marie Nováková and Ivo Provazník

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PC6: Cardiac Mechanics

Room: Grand Ballroom Lobby

- 306-174 **Comparison of Time and Frequency Domain Methods for the Feedback on Chest Compression Rate**
Digna M González-Otero*, Erik Alonso, Jesús Ruiz, Sofía Ruiz de Gauna, Elisabete Aramendi, Unai Ayala, James K Russel and Mohamud Daya
- 307-62 **Three-dimensional Apex-seismocardiography**
Samuel E Schmidt*, Ask Schou Jensen, Jacob Melgaard, Claus Graff, John Hansen, Tanveer A Bhuiyan and Johannes J Struijk
- 308-194 **Filtering Chest Compression Artifacts Improves the Performance of VF-detection Parameters.**
Unai Ayala*, Unai Irusta, Jesús Ruiz, Felipe Alonso-Atienza, Erik Alonso, Digna González-Otero, Jo Kramer-Johansen and Trygve Eftestøl
- 309-186 **Feasibility of Non-invasive Blood Pressure Estimation Based on Pulse Arrival Time: a MIMIC Database Study**
Braiam Escobar* and Róbinson Torres
- 310-232 **Measurement of Pulse Wave Velocity during Valsalva and Mueller Maneuvers by Whole Body Impedance Monitor**
Magdalena Matejkova*, Vlastimil Vondra, Josef Halamek, Ladislav Soukup, Filip Plesinger, Ivo Viscor and Pavel Jurak

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PC7: Electrophysiology Modelling

Room: Grand Ballroom Lobby

- 311-299 **Analysis of Electrogram Complexity during Atrial Fibrillation for Ablation Procedure Duration Prediction**
Katarzyna Kośna*, Piotr Podziemski, Lauren Wilson, Simon Stolcman, Prashanthan Sanders, Jan Jacek Żebrowski and Paweł Kuklik
- 312-397 **Frequency Spectrum Correlation along Atria to Study Atrial Fibrillation Recurrence**
Raquel Cervigon*, Javier Moreno, Jorge García-Quintanilla, Julián Pérez-Villacastín, Francisco Castells and José Millet
- 313-255 **Loss of Transverse-Tubules Promotes the Development of Ectopic Activity in Guinea-pig Ventricle**
Michael Alan Colman*, Sanjay Kharache and Henggui Zhang
- 314-362 **Point-to-Pixel Tracking Cancellation Pipeline for Motion Artifact Compensation in Uncoupler-Free Non-Ratiometric Experimental Optical Mapping Studies**
Jaime Yagüe-Mayans, Conrado J Calvo*, Francisco J Chorro and José Millet
- 315-240 **The Effect of Scar Tissue on Complexity of Activation Patterns in Simulated Human Ventricular Fibrillation**
Sathyavani Malyala* and Richard Clayton
- 316-275 **Motion Analysis Method for Determining Cardiomyocyte Beating Properties Based on Digital Image Correlation and Templates**
Antti Ahola*, Paruthi Pradhapan, Eeva Laurila, Katriina Aalto-Setälä and Jari Hyttinen

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MD: Plenary

Room: Grand Ballroom

Chair(s): Roger Mark and Olivier Meste

317-367 Discovering and Interpreting Dynamic Behaviors in Cardiovascular Time Series from a Heterogeneous Patient Cohort

Li-Wei Lehman*, Shamim Nemati, Matthew Johnson, George Moody, Thomas Heldt and Roger Mark

318-57 Ethnic Variation in Prevalence of End QRS Notching and Slurring in Apparently Healthy Populations

Elaine Clark* and Peter Macfarlane

319-17 Bidomain Simulations of Subendocardial Ischemia: The Forward and Inverse Problems

Marius Lysaker, Bjørn Fredrik Nielsen and Samuel Wall*