COMPUTING
IN
CARDIOLOGY

September 11-14, 2016
Vancouver, Canada
Program Overview

Sunday, September 11, 2016

13:00 Sunday Symposium: Cardiology and Space Flight at SFU Harbour Center Campus
13:00 Symposium Registration
14:00 Surviving and Thriving in Space: The Medical Consequences of Space Flight, Dr. Robert Thirsk
14:45 Cardiovascular Adaptation to Spaceflight: Surprises and Paradoxes, Dr. Peter Norsk
15:15 Three Dimensional Ballistocardiography: From Space Research to Clinical Applications, Dr. Pierre-Francios Migeotte
15:45 Coffee Break
16:30 Simulated Microgravity and the Autonomic Nervous System, Dr. J. Kevin Shoemaker
17:00 The Use of Advanced Machine Learning to Assess Cardiovascular Compensation in Conditions of Enteral Hypovolemia: Lessons Learned from Space and Trauma, Dr. Victor Convertino
17:30 Application of Bioinstrumentation in the Development of a Pressure Suit for Suborbital Flight, Dr. Erik Seedhouse
18:00 Closing Remarks and Discussion
19:00 Reception at Marriott Pinnacle Hotel (Conference Hotel)

Monday, September 12, 2016

8:00 Welcome to CinC 2016
8:15 M1: Rosanna Degani Young Investigator Finals
9:45 Coffee Break
10:00 S21: System Studies in Cardiovascular Autonomic Function
10:00 S22: ECG Repolarization
10:00 S23: Ventricular Arrhythmias/Resuscitation
10:00 S24: Magnetic Resonance Imaging
11:30 Coffee Break
11:45 S31: Ambulatory ECG
11:45 S32: Health Informatics
11:45 S33: Special Session: ECG Imaging in Atrial Electrophysiology
11:45 S34: Cardiac Imaging: Motion Analysis
13:30 Social Event

**Tuesday, September 13, 2016**

8:30 S41: Health Analytics and Software
Shaughnessy II

8:30 S42: Modeling: Tissue and Defibrillation
Pinnacle II

8:30 S43: Cardiac Pressure and Bloodflow
Shaughnessy I

8:30 S44: ECG Miscellaneous
Pinnacle III

10:00 Coffee Break

10:30 S51: Atrial Fibrillation
Shaughnessy I

10:30 S52: Membrane and Cellular Models
Dundarave

10:30 S53: Health Informatics and Wearable Systems
Pinnacle II

10:30 S54: ECG Miscellaneous II
Pinnacle III

10:30 S55: ECG Imaging I
Shaughnessy II

12:00 Break (Pick up Lunch)

12:30 P6: Poster Session with Lunch
Pinnacle I

12:30 P61: Medical Informatics and Technology
Pinnacle I

12:30 P62: ECG
Pinnacle I

12:30 P63: Cardiac Imaging
Pinnacle I

12:30 P64: Cardiovascular Modeling and Analysis
Pinnacle I

12:30 P65: Baroreflex Sensitivity and Autonomic Regulation
Pinnacle I

12:30 P66: Physionet Challenge I
Point Grey

14:00 Break

14:15 S71: Physionet Challenge I
Pinnacle II

14:15 S72: ECG Signal Processing I
Pinnacle III

14:15 S73: Cardiac Mechanics
Shaughnessy I

14:15 S74: Atrial Fibrillation-Clinical
Shaughnessy II

15:45 Coffee Break

16:00 S81: ECG Imaging II
Pinnacle II

16:00 S82: Novel Techniques for Heart Rate Variability
Shaughnessy I

16:00 S83: Multi-scale Modelling
Pinnacle III

16:00 S84: Intrinsic and Electronic Pacing
Shaughnessy II

16:00 S85: Special Session: Recent Advances in Seismocardiography and Ballistocardiography
Dundarave

**Wednesday, September 14, 2016**

8:30 S91: ECG Signal Processing II
Pinnacle II

8:30 S92: Physionet Challenge II
Pinnacle III
8:30  S93: Modelling Ion Channels and Drug Effects  Shaughnessy II
8:30  S94: Respiration, Heart Rate and Sleep Disorders  Shaughnessy I
10:00 Coffee Break
10:30  SA1: Special Session: QT, Drugs and Computing  Pinnacle II
10:30  SA2: Ultrasound Imaging  Shaughnessy I
10:30  SA3: Fetal, antenatal and neonatal Cardiovascular Control  Pinnacle III
10:30  SA4: Monitoring  Shaughnessy II
11:45 Break
12:15  PB: Poster Session with Light Lunch  Pinnacle I
12:15  PB1: Ventricular Arrhythmias  Pinnacle I
12:15  PB2: Atrial Fibrillation  Pinnacle I
12:15  PB3: Heartrate Variability  Pinnacle I
12:15  PB4: Cardiorespiratory Characterization and Analysis  Pinnacle I
12:15  PB5: ECG  Pinnacle I
12:15  PB6: Cellular and Tissue Models  Pinnacle I
12:15  PB7: ECG Miscellaneous  Pinnacle I
12:15  PB8: Physionet Challenge II  Point Grey
13:45 Break
14:00  MC: Plenary  Pinnacle II & III
15:00 Closing Ceremony  Pinnacle II & III
15:30 Conference Closes
Rosanna Degani Young Investigator Finals

Chair(s): Rob MacLeod and Leif Sornmo
Room: Pinnacle II & III

1-107 Left Atrial Hypertrophy Increases P-Wave Terminal Force Through Amplitude but not Duration
Axel Loewe*, Robin Andlauer, Olaf Dössel, Gunnar Seemann and Pyotr G. Platonov

2-366 Index of T-wave Variation as a Predictor of Sudden Cardiac Death in Chronic Heart Failure Patients with Atrial Fibrillation
Alba Martin*, Iwona Cygankiewicz, Antoni Bayés-De-Luna, Pablo Laguna, Enrico G Caiani and Juan Pablo Martinez

3-435 Modelling the Effects of Disopyramide on Short QT Syndrome Variant 1 in the Human Ventricles
Dominic G Whittaker*, Haibo Ni, Alan P Benson, Jules C Hancox and Henggui Zhang

4-418 Highest Dominant Frequency and Rotor Sites are Robust Markers for Atrial Driver Location in Non-invasive Mapping of Atrial Fibrillation
Miguel Rodrigo*, Andreu M Climent, Alejandro Liberos, Francisco Fernández-Avilés, Omer Berenfeld, Felipe Atienza and Maria S Guillem
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<td>S21</td>
<td>System Studies in Cardiovascular Autonomic Function</td>
<td>Andrew Blaber and Sonia Gouveia</td>
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<td>5-248</td>
<td>Controlling the Inspiration/Expiration Ratio Benefits the Deceleration Capacity Index of Heart Rate in Assessing the Sympatho-vagal Balance</td>
<td>Qing Pan, Chenglong Gao, Gongzhan Zhou, Ruofan Wang, Yihua Yu, Luping Fang* and Gangmin Ning</td>
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<td>6-525</td>
<td>Post-Stroke Alterations in Cardiovascular Responses and Heart Rate Variability during Orthostatic Challenge</td>
<td>Nandu Goswami*, Joel Rodriguez, Markus Kneihsl, Irhad Trozic, Rebecca Ruedl, Andreas Rössler, David A Green, Helmut Hingofer-Szalkay, Franz Fazekas and Andrew P. Blaber</td>
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<td>Analysis of Endocardial Micro-Accelerometry during Valsalva Maneuvers</td>
<td>Clément Gallet, Virginie Le Rolle, Jean-Luc Bonnet, Christine Henry, Albert Hagège, Philippe Mabo, Guy Carrault and Alfredo Hernandez*</td>
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<td>8-287</td>
<td>Volatility Leveraging in Heart Rate: Health vs Disease</td>
<td>Ana Paula Rocha*, Argentina Maria Leite and Maria Eduarda Silva</td>
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<td>Increased Systolic Blood Pressure driven Skeletal Muscle activation Following Stroke: A causality analysis</td>
<td>Nandu Goswami*, Ajay Verma, Amanmeet Garg, Da Xu, Reza Fazel Rezai, Kouhyar Tavakolian and Andrew P. Blaber</td>
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<td>10-157</td>
<td>Sex Differences in Cardiac Autonomic Status during Autonomic Provocations</td>
<td>Marek Malik*, Katerina Hnatkova, Peter Smetana, Tomas Novotny and Georg Schmidt</td>
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S22  ECG Repolarization

Chairs: Simon Rabkin and Shen Luo
Room: Pinnacle III

11-402  Postextrasystolic T Wave Change to Stratify Risk of Pump Failure Death in Patients with Chronic Heart Failure
Gustavo Lenis*, Robert Menges, Julia Ramírez, Iwona Cygankiewicz, Antoni Bayés de Luna, Juan Pablo Martínez, Pablo Laguna and Olaf Dössel

12-314  Automated ECG Ventricular Beat Detection with Switching Kalman Filters
Julien Oster* and Lionel Tarassenko

13-365  The Electrocardiographic J-point Location most Invariant to Myocardial Rotation
Claus Graff*, Christian Haarmark, Peter R Hansen, Jørgen K Kanter, Peter L Sørensen, Jacob Melgaard and Johannes J Struijk

14-311  Temporal Alignment of Asynchronously Sampled Biomedical Signals
Samuel Emil Schmidt*, Kasper Emerek, Ask Schou Jensen, Jacob Melgaard, Kasper Sørensen, Peter Sogaard and Johannes Jan Struijk

15-461  Comparison of two methods for assessment of Microvolt T-Wave Alternans: discrete vs continuous T-wave analysis
Thaís Winkert*, Paulo Roberto Benchimol-Barbosa and Jurandir Nadal

16-137  An Index for T-wave Pointwise Amplitude Variability Quantification
Julia Ramírez*, Michele Orini, J. Derek Tucker, Esther Pueyo and Pablo Laguna
S23  Ventricular Arrhythmias/Resuscitation

Chairs: Ravi Ranjan and Sofía Ruiz de Gauna
Room: Shaughnessy II

17-537  Cardiac Imaging and Modeling: Predicting the Future
Ravi Ranjan*

18-181  Subject-Specific Detection of Ventricular Tachycardia Using Convolutional Neural Networks
Sandeep Chandra Bollepalli, S Sastry Challa and Soumya Jana*

19-449  Enhancement of Arrhythmia Discrimination in Multi Modal Data with Morphological Features and Interval Features Extraction via Support Vector Machines and Random Forest Classifier
Farhad Asadi*, Mohammad Javad Mollakazemi and S. Hossein Sadati

20-378  Nonlinear Energy Operators for Defibrillation Shock Outcome Prediction
Beatriz Chicote Gutiérrez*, Unai Irusta Zarandona, Elisabete Aramendi Ecenarro, Iraia Isasi Liñero, Daniel Alonso Moreno, Fernando Vicente Casanova and Maria de las Cruces Sanchez Fernandez

21-218  Additive Model to Evaluate the Accuracy of Chest Compression Feedback Systems in Moving Vehicles
Digna M González-Otero*, Jesús Ruiz, Sofía Ruiz de Gauna, James K Russell, Luis Alberto Leturiondo and Purificación Saiz

22-219  Chest Diameter Measurement in Pediatric Patients for Chest Compression Feedback Calibration
Sofía Ruiz de Gauna*, Digna M González-Otero, Jesús Ruiz, Stefano De Nigris, Purificación Saiz, José Julio Gutiérrez, James K Russell and Elena De Momi
Monday, September 12, 2016

10:00

S24 Magnetic Resonance Imaging

Chairs: Victor Mor-Avi and Carolina Vallecilla
Room: Shaughnessy I

23-440 Aortic Flow and Morphology Adaptation to Deconditioning after 21-Days of Head-Down Bed-Rest Assessed by Phase Contrast MRI

Enrico Caiani*, Giovanni Riso, Federica Landreani, Alba Martin, Selene Pirola, Filippo Piatti, Francesco Sturla, Pierre Vaida and Pierre-Francois Migeotte

24-429 Development of 3D Patient-specific Models for Left Atrium Geometric Characterization to Support Ablation in Atrial Fibrillation Patients

Maddalena Valinoti*, Claudio Fabbri, Dario Turco, Roberto Mantovan, Antonio Pasini and Cristiana Corsi

25-237 Automatic Segmentation of Left Ventricular Myocardium by Deep Convolutional and De-convolutional Neural Networks

Xulei Yang*, Like Gobeawan, Si Yong Yeo, Wai Teng Tang, Zhen Zhou Wu and Yi Su

26-356 Right Ventricular Endocardial Segmentation in CMR Images using a Novel Inter-Modality Statistical Shape Modelling Approach

Concetta Piazzese, M. Chiara Carminati, Rolf Krause, Angelo Auricchio, Lynn Weinert, Gloria Tamborini, Mauro Pepi, Roberto M. Lang and Enrico G. Caiani*

27-227 A Bi-centric Study of Myocardial Circumferential Strain from CMR by Using Hyperplastic Wrapping Approach

Hua Zou, Ce Xi, Xiaodan Zhao, Ju Le Tan, Lik Chuan Lee, Kenneth Guo, Martin Genet, Fei Gao, Ru San Tan, Jun-Mei Zhang* and Liang Zhong

28-224 A Novel Left Ventricular Volumes Prediction Method Based on Deep Learning Network in Cardiac MRI

Gongning Luo, Guanxiong Sun, Kuanquan Wang*, Suyu Dong and Henggui Zhang
S31  Ambulatory ECG

Chairs: Marek Malik and José Luis Rojo-Álvarez
Room: Pinnacle II

29-156  Curvatures of QRS/RR Relationship in Healthy Individuals
Katerina Hnatkova, Peter Smetana, Ondrej Toman, Georg Schmidt and Marek Malik*

30-517  The Effects of 40 Hz Low-pass Filtering on the Spatial QRS-T Angle
Daniel Guldenring*, Dewar Finlay, Raymond Bond, Alan Kennedy and James McLaughlin

31-300  Artificial Rhythm Recognition using Portable Cardiomonitor and Mobile Application
Maria Chaykovskaya*, Alexander Kalinichenko, Ekaterina Fetisova, Sergey Mironovich and Alexey Kiprensky

32-526  Optimisation of Electrode Placement for New Ambulatory ECG Monitoring Devices
Alan Kennedy*, Dewar Finlay, Daniel Guldenring, Raymond Bond, James McLaughlin and Keiran Moran
Health Informatics

Chairs: Raymond Bond and Thomas Hilbel
Room: Shaughnessy II

33-242 **Old Dog, New Tricks - In Silico Characterization of Antazoline Cardiac Safety**
Sebastian Polak*, Bartosz Lisowski, Bogna Badyra, Roman Piotrowski, Piotr Kułakowski, Joanna Giebułtowicz, Piotr Wroczyński and Barbara Wiśniowska

34-515 **Eye-Tracking Coronary Care Nurses During the Interpretation of Patient Monitoring Scenarios**
Jonathan Currie, Raymond R. Bond*, Paul McCullagh, Pauline Black, Dewar D. Finlay and Aaron Peace

35-146 **Estimating Fetal Gestational Age Using Cardiac Valve Intervals**
Faezeh Marzbanrad*, Ahsan Habib Khandoker, Yoshitaka Kimura, Marimuthu Palaniswami and Gari Clifford
Special Session: ECG Imaging in Atrial Electrophysiology

Chairs: Maria de la Salud Guillém and Olaf Doessel
Room: Dundarave

ECG Imaging of Focal Atrial Excitation: Evaluation in a Realistic Simulation Setup
Danila Potyagaylo, Axel Loewe and Olaf Dössel*

Evaluation of Combined Noninvasive Electrocardiographic Imaging and Phase Mapping approach for Atrial Fibrillation: A Simulation Study
Remi Dubois*, Ali Pashaei and Ed Vigmond

High Frequency Driving Sites Anchor to Fibrotic Regions in Chronic Atrial Fibrillation
Nathan Angel, Derek Dosdall, Rob MacLeod and Ravi Ranjan*

Noninvasive Identification of Atrial Fibrillation Drivers: Simulation and Patient Data Evaluation
Maria de la Salud Guillem Sánchez*, Andreu M Climent, Miguel Rodrigo, Ismael Hernández-Romero, Alejandro Liberos, Francisco Fernández-Avilés, Omer Berenfeld and Felipe Atienza
S34  Cardiac Imaging: Motion Analysis
    Chairs: Cristiana Corsi and Yi Su
    Room: Shaughnessy I

Automatic Segmentation of Mitral Leaflet Movement in Doppler Tissue M-Mode Ultrasound
Kasper Sørensen*, Samuel Emil Schmidt, Peter L Sørensen, Anne-Sofie Korsager, Jacob Melgaard, Peter Søgaard and Johannes Struijk

41-323  Respiratory Motion Correction for 2D Cine Cardiac MR Images using Probabilistic Edge Maps
Ozan Oktay, Giacomo Tarroni*, Wenjia Bai, Antonio de Marvao, Declan O'Regan, Stuart Cook and Daniel Rueckert

42-452  A Miniaturized MEMS Motion Processing System for Nuclear Medicine Imaging Applications
Mojtaba Jafari Tadi*, Eero Lehtonen, Jarmo Teuho, Antti Saraste, Mikko Pänkäälä, Mika Teräs and Tero Koivisto
S41 Health Analytics and Software
Chairs: Johan De Bie and Matthias Gorges
Room: Shaughnessy II

43-205 Closing the Data Loop: A Software Tool for Quick and Easy Access of the MIMIC III Database
Mohammad Adibuzzaman*, Ken Musselman, Alistair Johnson, Paul Brown, Zachary Pitluk Pitluk and Ananth Grama

44-507 Application of New Compact Genetic Algorithm based on Data Types Abstracts in Processing Electrocardiographic Signals in High Performance Platform
Andrilene Maciel Maciel*

45-437 Telecardiology under Resource Constraint: Low-complexity Compact Representation of ECG
Roopak Tamboli and Soumya Jana*

46-388 Design of an Electronic Upload and Reporting System aimed at Corelab Tasks and Responsibilities in Multicenter Clinical Trials
Jan Walter Benjamins*, Yoran M. Hummel, Jan Peter Busman, Frans Riepma, Bernard Dorhout and Joost P. van Melle

47-209 Machine Learning Approaches for Supporting Patient-Specific Cardiac Rehabilitation Programs
Danilo Lofaro*, Maria Carmela Groccia, Domenico Conforti, Sergio Caroleo and Gionata Fragomeni

48-277 An Annotation Driven Rule-based Algorithm for Suggesting Multiple 12-lead Electrocardiogram Interpretations
Andrew Cairns*, Raymond Bond, Dewar Finlay and Daniel Guldenring
S42  Modeling: Tissue and Defibrillation
Chairs: Martin Bishop and Gunnar Seeman
Room: Pinnacle II

49-369 Impact of Three Dimensional Atrial Fibrosis on Development and Stability of Rotational Activity in Atrial Fibrillation – A 3D Simulation and Clinical High-density Mapping Study in Persistent Atrial Fibrillation
Markus Rottmann*, Ufuk Aslan, Wenzel Kaltenbacher, Viktor Markstein, Thomas Arentz, Olaf Dössel and Amir Jadidi

50-233 The Effect of Conductivity Values on Activation Times and Defibrillation Thresholds
Barbara Johnston*, Josef Barnes and Peter Johnston

51-263 Biventricular Pacing Optimization by Means of the Dyssynchrony Parameter
Pavel Jurak*, Pavel Leinveber, Josef Halamek, Filip Plesinger, Tereza Postranecka, Jolana Lipoldova and Miroslav Novak

52-487 Continuous Models Fail to Capture Details of Reentry in Fibrotic Myocardium
Tanmay Gokhale*, Eli Medvescek and Craig Henriquez

53-206 The Strength-Interval Curve for Blood Vessels
Adam Connolly* and Martin Bishop

54-405 Regularity of Node Distribution Impacts Conduction Velocities in Finite Element Simulations of the Heart
Eike Moritz Wülfers, Olaf Dössel and Gunnar Seemann*


Cardiac Pressure and Bloodflow  

Chairs: Dingchang Zheng and Roberto Sassi  
Room: Shaughnessy I

The Pressure Gradient across the Endocardium
rchad shoucri*

Estimation of End-Diastolic Pressure via Deconvolution
Chaeopf Hoog Antink*, Daniel Rüschen, Steffen Leonhardt and Marian Walter

Diastolic Augmentation Index Improves Augmentation Index in Assessing Arterial Stiffness
Yang Yao, Lisheng Xu*, Yu Wang, Yahui Zhang, Yingxian Sun and Liang Guo

Exploratory Study of the Cardiac Dynamic Trajectory in the Embedding Space
Jorge Oliveira*, Bruna Cardoso and Miguel Coimbra

Heart-valve Sounds Obtained with a Laser Doppler Vibrometer
Johannes Struijk*, Kim Munck, Bolette Dybkjær Hansen, Nina Jacobsen, Louise Pilgaard, Kasper Sørensen and Samuel Emil Schmidt

Computer Simulations of Three-dimensional Blood Flow in Patient-specific Aorta Models with Aortic Aneurysms
Jun-Mei Zhang*, Dian Farhana Binte Haron, Adrian Shoen Choon Seng Low, Boyang Su, Kenny Yoong Kong Sin, Ru San Tan, Hua Zou and Liang Zhong
ECG Miscellaneous

8:30

Elaine Clark and John Wang

Pinnacle III

61-436 A Vectorcardiographic Evaluation of the Consensus Criteria for Early Repolarization
Peter L Sørensen*, Kasper Sørensen, J Melgaard, JJ Struijk, SM Hansen, JK Kanters, JB Nielsen, JH Svendsen, S Haunsoe, L Koeber, AG Holst, A Pietersen, C Torp-Pedersen, FK Lippert and C Graff

62-447 Linear Discriminant Analysis for Classifying Brugada Syndrome Patients According to Symptomatology
DANIEL ROMERO*, Mireia Calvo, Nathalie Behar, Philippe Mabo and Alfredo Hernandez

63-524 The Role of Reduced Left Ventricular, Systolic Blood Volumes in ST Segment Potentials Overlying Diseased Tissue of the Ischemic Heart
Brett Burton*, Kedar Aras, Jess Tate, Wilson Good and Rob MacLeod

64-138 Diagnosis and Prognosis of the V-index in Patients with Symptoms Suggestive of Acute Myocardial Infarction in the Emergency Departement
Roger Abächerli*, Raphael Twerenbold, Roberto Sassi, Luca Minard and Tobias Reichlin

65-395 Prevalence of Ventricular Ectopy in Older Adults across Different Frailty Levels
Saman Parvaneh*, Bijan Najafi, Nima Toosizadeh, Irbaz Bin Riaz and Jane Mohler

66-269 A Multi-Stage decision support Algorithm to Rule-Out patients with suspected Acute Myocardial Infarction (AMI)
Cesar Oswaldo Navarro Paredes*, James A Shand, Mary Jo Kurth, David J McEneaney and James McLaughlin
S51  Atrial Fibrillation

Chairs: Peter Johnston and Stef Zeemering
Room: Shaughnessy I

67-421 A New Model of the Human Atrial Myocyte with Variable T-tubule Organization for the Study of Atrial Fibrillation
Michael A Colman*, Niall Macquaide and Antony Workman

68-193 Personalized Modeling Pipeline for Left Atrial Electromechanics

69-199 Predicting Spiral Wave Stability by Personalized Electrophysiology Models
Cesare Corrado*, John Whitaker, Henry Chubb, Steven Williams, Matt Wright, Jaswinder Gill, Mark O'Neill and Steven Niederer

70-474 High Resolution Microscopic Optical Mapping of Anatomical and Functional Reentries in Human Cardiac Cell Cultures
Andreu M Climent*, Ismael Hernández-Romero, Maria de la Salud Gúíllem Sánchez, Nuria Montserrat, Maria Eugenia Fernández, Felipe Atienza and Francisco Fernández-Avilés

71-216 Epicardial Fibrosis Explains Increased Transmural Conduction in a Computer Model of Atrial Fibrillation
Ali Gharaviri*, Mark Potse, Sander Verheule, Rolf Krause, Angelo Auricchio and Ulrich Schotten

72-304 Dynamic Behavior of Rotors during Human Persistent Atrial Fibrillation as observed using Non-Contact Mapping
Nawshin Dastagir*, Tiago Almeida, Xin Li, Frederique J Vanheusden, Gavin S Chu, Peter J Stafford, G Andre Ng and Fernando S Schlindwein
An Algorithm for Fitting Local Membrane Parameters to an Action Potential Duration Map in a Tissue with Electrotonic Interactions
Angelina Drahi, Akshay Kota Aswath Kumar and Vincent Jacquemet

Simulation Study on Balance of Glycolytic ATP Production and Oxidative Phosphorylation in Embryonic and Adult Ventricular Cells
Hitomi Sano*, Yasuhiro Naito and Masaru Tomita

Na+ Current in Human Atrial Myofibroblasts Alters Myocyte Excitability: A Computational Study
Heqing Zhan*, Jialun Lin, Xiaoling Li and Jingtao Zhang

Effects of the Transient Outward Potassium Current on Action Potential Upstroke Velocities Tested Using the Dynamic Clamp Technique
Arie Verkerk, Christiaan Veerman, Jan Zegers and Ronald Wilders*

A New Tool for the Action Potential Repolarization Dynamic Analysis: Application to the Discrimination of Diabetic and Control Cells
Olivier Meste*, Marianna Meo, Sergio Signore and Marcello Rota

Numerical Analysis of Conduction of the Action Potential Across the Purkinje Fibre-Ventricular Muscle Junction
Jue Li*, Henggui Zhang and Mark Boyett
S53  Health Informatics and Wearable Systems

Chair: Dewar Finlay and Frans Riepma
Room: Pinnacle II

79-432 Difference in Pulse Arrival Time at Forehead and at Finger as a Surrogate of Pulse Transit Time
Jesus Lazaro*, Raquel Bailón, Pablo Laguna, Vaidotas Mazoras, Andrius Rapalis and Eduardo Gil

80-163 Cor/log BAN BT a Wearable Battery Powered mHealth Data Logger and Telemetry Unit for Multiple Vital Sign Monitoring.
Thomas Hilbel*, Sven Feilner, Matthias Struck, Sven Hofmann, Andreas Heinig and Hugo Katus

81-339 Atrial Fibrillation Detection Using Photo-plethysmography and Acceleration Data at the Wrist
Alberto Bonomi*, Fons Schipper, Linda Eerikainen, Jenny Margarito Ronald Aarts, Saeed Babaeizadeh, Helma de Morree and Lukas Dekker

82-334 Cardiac Condition Monitoring through Photoplethysmogram Signal Denoising Using Wearables: Can We Detect Coronary Artery Disease with Higher Performance Efficacy?
Arijit Ukil*, Soma Bandyopadhyay, Chetanya Puri, Arpan Pal and Kayapanda Mandana

83-491 Multi-Dimensional Kineticardiography in Simulated Microgravity: Preliminary Results from the ESA-RSL 60 days Bed
Pierre-François Migeotte*, Jean Monfils, Federica Landreani, Alba Martin-Yebra, G.K. Prisk, Irina Funtova, Jens Tank, Philippe van de Borne and Enrico Caiani

84-380 Impact of the Mechanical Interface on BCG Signals obtained from Electronic Weight Scales
Ramon Casanella*, Joan Gomez-Clapers, Marc Hernandez-Urrea and Ramon Pallas-Areny
S54 ECG Miscellaneous II

Chairs: Paul Rubel and Fabio Badilini
Room: Pinnacle III

85-172 Reproducibility of Heart Rate Variability Characteristics Measured on Random 10-second ECG using Joint Symbolic Dynamics
Muammar Kabir*, Golriz Sedaghat, Jason Thomas and Larisa Tereshchenko

86-171 Finding similar ECGs in a large 12-lead ECG database
Richard Gregg*, Sophia Zhou and Saeed Babaeizadeh

87-361 High Frequency QRS for Detection of Myocardial Ischemia
Pavel Leinveber*, Josef Halamek, Pavel Jurak, Filip Plesinger, Jolana Lipoldova, Juraj Jurco and Miroslav Novak

88-132 Potential Solutions for Managing Real-Time ECG/Arrhythmia Monitoring Alarms - A Review
John Wang*

89-118 Comparison of Spatial QRS-T Angle in Different Healthy Racial Groups
Elaine Clark* and Peter Macfarlane

90-500 SCP-ECG V3.0: An enhanced Standard Communication Protocol for computer-assisted Electrocardiography
Paul Rubel*, Danilo Pani, Alois Schloegl, Jocelyne Fayn, Fabio Badilini, Peter Macfarlane and Alpo Varri
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<td>Reimi Dubois and Dana Brooks</td>
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<td><strong>Noninvasive Localization of Premature Ventricular Activity Using Different Equivalent Point Sources</strong></td>
<td>Jana Svehlikova* and Milan Tysler</td>
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<td><strong>Noninvasive Epicardial and Endocardial Electrocardiographic Imaging of Scar-Related Ventricular Tachycardia</strong></td>
<td>Linwei Wang, Omar Gharbia, Sandesh Ghimire*, Milan Horacek and John Sapp</td>
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<td>92-434</td>
<td><strong>A Comparison of Boundary Element and Method of Fundamental Solutions for the Inverse Problem of</strong></td>
<td>Laura Bear*, Leo Cheng, Denis Loiselle, Josselin Duchateau, Remi Dubois and Bruce Smaill</td>
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<td>93-198</td>
<td><strong>The Consortium on Electrocardiographic Imaging</strong></td>
<td>Jaume Coll-Font*, Dana H Brooks, Peter M van Dam, Jwala Dhamala, Olaf Dössel, Maria de la Salud Guillem Sánchez, Rob MacLeod, Danila Potyagaylo, Walther Schulze, Jess D Tate and Linwei Wang</td>
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<td>94-431</td>
<td><strong>Temporal Dilation of Animal Cardiac Recordings Registered to Human Torso Geometry</strong></td>
<td>Karli Gillette, Jess Tate*, Brianna Kindall, Wilson Good, Jeff Wilkinson, Narendra Simha and Rob MacLeod</td>
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<td>95-426</td>
<td><strong>Beat-to-Beat Variability in Repolarzation is Associated with the Level of High Sensitivity Troponin in Acute Coronary Syndrome and Acute Heart Failure</strong></td>
<td>Larisa Tereshchenko* and Albert Feeny</td>
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Sample Entropy Analysis of Hemodynamic Parameters in elderly with Orthostatic Intolerance Symptoms
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Effect of Autonomic Cardiac Modulation on Speech Perception in Noise
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Hemodynamic Modelling in a Calf – a Pilot Study
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Tuesday, September 13, 2016

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151-347 Effect of Hypoxia and Hyperoxia on Baroreflex Sensitivity
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152-111 Instantaneous Response Patterns of Baroreflex Sensitivity and Vagal Activity during Cold Face Test and Active Orthostatic Test
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154-344 Reflection of Autonomic Regulation Behaviour Using Short-Term Cross-Spectral Analysis on RR and QT Intervals
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155-486 Management of Lower Extremity Oedema Using a Novel Smart Compression System
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Abnormal Heart Sounds Detected from Short Duration Unsegmented Phonocardiograms by Wavelet Entropy
Philip Langley*

Improving the Classification of Heart Sound Recordings
Juan L. Domínguez-Olmedo* and Jacinto Mata Vázquez

Automated Classification of Normal and Abnormal Heart Sounds using Phonocardiograms
Anthony Bouril, Darya Aleinikava and Grace Mirsky*

Machine Learning Based Identification of Pathological Heart Sounds
Tanmay Gokhale*

Using Spectral Acoustic Features to Identify Abnormal Heart Sounds
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Recognition of Abnormalities in Heart Sound Recordings by Reconstruction of Idealised Beats
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Michael Tschannen*, Thomas Kramer, Gian Marti, Matthias Heinzmann and Thomas Wiatowski

Classification of Acoustic Physiological Signals Based on Deep Learning Neural Networks with Augmented Features
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Classification of Phonocardiogram Signals with Support Vector Machines Using Waveform and Power Spectral Features
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Time-Frequency Analysis of Phonocardiogram for Classifying Heart Disease

Time and Frequency Based Heart Sound Classifier
Jarno Mäkelä and Heikki Väänänen*

Can ECG Classification be Applied to PCG Data? – An Analysis Using a Transformational LSTM
Christopher Schölzel* and Andreas Dominik

Classification of Noisy Heart Sound Recordings Using Hidden Markov Models
Paria Rashidinejad* and Yusuf Bugra Erol

Normal/Abnormal Heart Sound Recordings Classification Using Deep Recurrent Neural Network
Tanachat Nilanon*, Sanjay Purushotham and Yan Liu

Heart Sound Classification based on Temporal Alignment Techniques
Jose Javier Gonzalez Ortiz*, Cheng Perng Phoo and Jenna Wiens

Classification of Normal/Abnormal Heart Sound Recordings Based on Mixed Features and Multi-variable Regression Model
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Heart Sound Classification from Wavelet Decomposed Signal Using Morphological and Statistical Features
Tamanna Tabassum Khan Munia, Alireza Akhbardeh, Farzad Khosrow-Khavar, Vahid Zakeri, Reza Fazel-Rezai and Kouhyar Tavakolian*

Classification of Heart Sound using Time Domain Features
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174-492 **Feature Selection for the Classification of Heart Sounds Recordings based on Entropy Measurements**
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175-455 **Classification of Heart Sound Recordings via Recurrent Neural Networks**
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176-238 **Heart Sound Recordings Classification by Neuro-SVM Classifiers: Geometrical and Multi-resolution Analysis**
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177-133 **Classification of Heart Sound Signals Based on AR Model**
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178-230 **Monitoring Cardiac Stress Using Features Extracted from Heart Sounds**
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182-399 Hybrid Feature Aggregation for Detection of Abnormal Heart Sound
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Christian Thomae* and Andreas Dominik

184-315 A Tensor Approach to Heart Sound Classification
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200-350 Wrist-Located Heart Rate Monitor Device Used for Atrial Fibrillation Screening: A Preliminary Study
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Reconstruction of Atrial Ectopic Focal and Re-entrant Excitations from Body Surface Potentials: Insights from 3D Virtual Human Atria and Torso
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Mobile Based Study Links Insomnia and Sympathovagal Balance

Shuli Eyal* and Anda Baharav

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Tamas Madl*
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Role of Substrate Flexibility on Cardiac Cell Culture Electrophysiological Properties
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Predictive Analysis of Cardiac Resynchronization Therapy Response by means of the ECG
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Dynamic Regulation of Pacemaker Activity by the Na+-K+ Pump
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223-364  Direct Pulse Transit Time Measurement from an Electronic Weight Scale  
Joan Gomez-Clapers, Ramon Casanella* and Ramon Pallas-Areny

224-428  Quantification of Posture Induced Changes in Wearable Ballistocardiogram Signals for Heart Failure Patients  
Abdul Qadir Javaid, Sean Dowling, Mozziyar Etemadi, James Alex Heller, Shuvo Roy, Liviu Klein and Omer Inan*

225-115  A New Technological Platform for the Multisite Assessment of 3D Seismocardiogram and Pulse Transit Time in Cardiac Patients  
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Chairs: Pablo Laguna and Roger Abaecherli
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226-413 Sparse Coding of Cardiac Signals for Automated Component Selection after Blind Source Separation
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227-367 ECG analysis based on Lempel-Ziv Complexity algorithm as a detection tool of Sleep-Related Breathing Disorders
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228-121 A Model for Estimation of Noise Tolerance in ECG Parameters
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229-184 Multi-classification of Cardiac Diseases Utilizing Wavelet Thresholding and Support Vector Machine
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231-377 Assessment of the Dynamic Response of Cardiac Depolarization During Stress Test Recovery Evaluated in Patients with Brugada Syndrome
DANIEL ROMERO*, Nathalie Behar, Virginie Le Rolle, Philippe Mabo and Alfredo Hernandez
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Chairs: Gari Clifford and Roger Mark
Room: Pinnacle III

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233-260 Discrimination of Normal and Abnormal Heart Sounds Using Probability Assessment
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234-191 Heart Sound Classification via Sparse Coding
Bradley Whitaker* and David Anderson

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Christoph Hoog Antink*, Julian Becker, Steffen Leonhardt and Marian Walter

236-175 Classifying Heart Sound Recordings using Deep Convolutional Neural Networks and Mel-Frequency Cepstral Coefficients
Jonathan Rubin*, Rui Abreu, Anurag Ganguli, Saigopal Nelaturi, Ion Matei and Kumar Sricharan

237-325 Automatic Heart Sound Recordings Classification using LogitBoost
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S93  Modelling Ion Channels and Drug Effects
Chairs: Eleonora Grandi and Javier Saiz
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238-173  Sub-Cellular Network Analysis of Ryanodine Receptor Positioning in Control and Phosphorylated States
Ismail M. Khater*, David R.L. Scriven, Edwin D.W. Moore and Ghassan Hamarneh

239-489  The Effect of Bioenergetic Impairment of Cytosolic Processes in Spatio-Temporal Ca2+ Dynamics in a Three-Dimensional Cardiomyocyte Model
Gareth Jones*, Henggui Zhang and Michael A Colman

240-360  Modelling the Effects of Nifedipine on Ventricular and Myometrial Cells of Pregnant Rats
Craig P Testrow*, Dominic G Whittaker, Arun Holden and Henggui Zhang

241-414  Rapid Characterisation of hERG Channel Kinetics using Sinusoidal Voltage Protocols
Kylie Beattie*, Remi Bardenet, James Louttit, David Gavaghan, Teur de Boer and Gary Mirams

242-212  In Quest of a Sinoatrial Cell Model to Assess the Functional Effects of Mutations in the HCN4 Funny Current Gene
Ronald Wilders* and Arie Verkerk

243-411  Synergistic Anti-arrhythmic Effects of Combining Blockade of Ultra-rapid Delayed Rectifier Potassium and Sodium Channels in the Human Atria
Haibo Ni, Dominic G Whittaker*, Wei Wang and Henggui Zhang
S94  Respiration, Heart Rate and Sleep Disorders
  Chairs: Carolina Varon and Jean-Marc Vessin
  Room: Shaughnessy I

244-357  Closed-loop Kinesthetic Stimulation for the Treatment of Sleep Apnea Syndromes
  Diego Perez*, Gustavo Guerrero, Delphine Feuerstein, Laurence Graindorge, Amel Amblard and Alfredo Hernandez

245-293  Information Transfer Between Respiration and Heart Rate During Sleep Apnea
  Carolina Varon*, Luca Faes, Dries Testelmans, Bertien Buyse and Sabine Van Huffel

246-183  Sleep Apnea Screening with a Contact-Free Under-the-Mattress Sensor
  Maayan Lia Yizraeli Davidovich, Roman Karasik and Zvika Shinar*

247-496  Cerebral Oximetry Versus Pulse Photoplethysmography to Monitor Respiration Rate
  Iraia Isasi, Unai Irusta*, Elisabete Aramendi, Goiuri Peralta and Erik Alonso

248-112  Beat-To-Beat Autonomic Cardiovascular Response to Short-Term 100%O2 Breathing: a Time-Frequency Analysis Approach
  Salvador Carrasco-Sosa and Alejandra Guillén-Mandujano*

249-283  Real-Time Respiratory Rate Estimation using Imaging Photoplethysmography Inter-Beat Intervals
  Leila Mirmohamadsadeghi*, Sibylle Fallet, Virginie Moser, Fabian Braun and Jean-Marc Vesin
Special Session: QT, Drugs and Computing

SA1  
Wednesday, September 14, 2016  10:30

Evaluating the Effect of a Novel Cardiac Late Sodium Current Inhibitor (Eleclazine) on the QT, QTpeak and TpTe Intervals in LQT3 Patients Using the QT Clock Concept

Alex Page*, Jennifer Hellawell, Patrick Yue, Luiz Belardinelli, Wojciech Zareba, Tolga Soyata and Jean-Philippe Couderc

In Silico Drug Trials Predict Safety and Efficacy of 10 Anti-Arrhythmic Compounds and Identify Sub-Populations at Higher Risk

Elisa Passini*, Oliver Britton, Alfonso Bueno-Orovio and Blanca Rodriguez

Cell-to-ECG Modeling and Clinical Trial ECG Evaluation of ECG J-to-Tpeak Interval

Joel Xue*

Optimization of an In Silico Cardiac Cell Model to Predict Anti-arrhythmic Effects of Late Sodium Block

Sara Dutta*, David Strauss, Thomas Colatsky and Zhihua Li
Automatic Dynamic Quantification of Oesophagus Position from Intra-cardiac Echocardiography During Atrial Fibrillation Ablation
Federica Lauretti*, Rachele Angeletti, Alessandro Dal Monte, Corrado Tomasi and Cristiana Corsi

Design of a Multiplexing Scheme for a Matrix Array for 3D Cardiac Imaging
Carolina Vallecilla* and Jan D’hooge

Multicenter Validation of Three-Dimensional Echocardiographic Quantification of the Left Heart Chambers using Automated Adaptive Analytics
Diego Medvedofsky, Roberto Lang, Mihaela Amzulescu, Covadonga Fernández-Golfín, Rocio Hinojar, Mark Monaghan, Joseph Reiken, Masaaki Takeuchi, Wendy Tsang, Jean-Louis Vanoverschelde, Indrajith Vath, Lynn Weinert, Jose Luis Zamorano and Victor Mor-Avi*

Feature Tracking Algorithm for Circumferential Strain using High Frame Rate Echocardiography
Martin Vandborg Andersen*, Cooper Moore, Samuel Schmidt, Peter Søgaard, Johannes Struijk, Joseph Kisslo and Olaf von Ramm

A Combined Multi-scale Deep Learning and Random Forests Approach for Direct Left Ventricular Volumes Estimation in 3D Echocardiography
Suyu Dong, Gongning Luo, Guanxiong Sun, Kuanquan Wang and Henggui Zhang*
Fetal, antenatal and neonatal Cardiovascular Control

Chairs: Laura Burattini and Guy Carrault
Room: Pinnacle III

Antenatal Fetal Heart Rate Acceleration Detection
Philip Warrick* and Emily Hamilton

Relationship between Deceleration Areas in the Second Stage of Labor and Neonatal Acidemia
Angela Agostinelli*, Flavio Palmieri, Alessandra Biagini, Agnese Sbrollini, Luca Burattini, Francesco Di Nardo, Sandro Fioretti and Laura Burattini

Heart Rate Variability Analysis of Normal and Intrauterine Growth Restricted Children using Sample Entropy
Taher Biala*, Fernando S. Schlindwein, J. Alexandre Lôbo Marques and Michael Wailoo

Regularity of Fetal HRV Changes in an In-vivo Sheep Model of Labor
Massimo W Rivolta, Md Aktaruzzaman, Tamara Stampalija, Daniela Casati, Martin G Frasch, Enrico Ferrazzi and Roberto Sassi*

Effects of Postnatal Environmental Tobacco Smoke on Cardiorespiratory Control in Newborn Lambs
Sally Al Omar*, Virginie Le Rolle, Nathalie Samson, Jean-Paul Praud and Guy Carrault
### 264-161 A Multicentric Study of Long-term Rhythm Patterns in Heart Rate


### 265-207 Evaluation of the Accuracy and Noise Response of an Open-source Pulse Onset Detection Algorithm on Pulsatile Waveform Databases

Chengyu Liu*, Qiao Li and Gari Clifford

### 266-145 Computational Efficiency and Accuracy for QRS Detection Algorithms on Clinical Long Term Multilead Monitoring


### 267-273 Assessing Effect of Beat Detector on Detection Dependent Signal Quality Indices

Chathuri Daluwatte*, Lars Johannesen, Loriano Galeotti, Jose Vicente, David Strauss and Christopher Scully
Ventricular Arrhythmias

Modeling and Simulation Study of the T618I Mutation in Human Ventricular Cell and Tissue
Weigang Lu*, JiaZhi Du, Fei Yang, Jie Li, Kuanquan Wang and Junyu Dong

A Novel Method for Automated Fractionation Detection in Ventricular Tachycardia
Divyanshu Gupta, Damian Redfearn*, Javad Hashemi and Selim Akl

Modulation of Effective Refractive Period at the Infarct Border-Zone Provides a Mechanism for Focal Arrhythmogenesis
Adam Connolly, Pawel Gawenda, Gernot Plank and Martin Bishop*

Functional Effects of Island-distribution of Mid-cardiomyocytes on Re-entrant Excitation Waves in the KCNQ1-linked Short QT Syndrome
Cunjin Luo*, Kuanquan Wang and Henggui Zhang

Computational Investigation of Pro-arrhythmogenesis of Heart Failure Induced Electrical Remodelling in Ventricles
Kun Jian and Henggui Zhang*

Nonuniform Interpolation of Cardiac Navigation Maps Using Support Vector Machines

Calcium Calmodulin Dependent Protein Kinase II (CaMKII) Contribute to Arrhythmias after Acidosis:A Simulation Study
Huanling Liu*, Kuanquan Wang, Jieryn Bai, Suyu Dong and Henggui Zhang

A Quantitative Analysis on the Intracardiac Electrogram Contact During Ventricular Tachycardia Ablation
David Rivas-Lalaleo*, Mónica Huerta, Margarita Sanromán-Junquera, Juan José Sánchez-Muñoz, Arcadi García-Alberola and Jose Luis Rojo-Alvarez
276-124 In Silico Investigation of Spontaneous Calcium Release on Premature Ventricular Contractions in Human Ventricles
Jieyun Bai, Kuanquan Wang*, Gongning Luo and Henggui Zhang

277-220 Relationship between EtCO2 and Quality-Parameters during Cardiopulmonary Resuscitation
Jesús Ruiz Ojeda, Sofía Ruiz de Gauna*, Digna M González-Otero, Mohamud Daya, James K Russell, José Julio Gutiérrez and Mikel Leturiondo

278-141 Attraction of Arrhythmia Sources by Fibrotic Scars via Dynamical Restructuring of the Activation Pattern
Nele Vandersickel*, Ivan V Kazbanov, Massaya Watanabe, Qian Tao, Jan Fostier and Alexander V. Panfilov

279-251 Combined Signal Averaging and Electrocardiographic Imaging Method to Non-Invasively Identify Atrial and Ventricular Tachycardia Mechanisms
Corentin Dallet*, Josselin Duchateau, Mélèze Hocini, Laura Bear, Marianna Meo, Frédéric Sacher, Michel Haissaguerre and Remi Dubois
PB2 Atrial Fibrillation

Room: Pinnacle I

Martino Alessandrini*, Maddalena Valinoti, Roberto Mantovan, Antonio Pasini, Stefano Severi and Cristiana Corsi

281-158 Enabling Atrial Fibrillation Detection Using a Weight Scale
Brian Ayers, Connor Beshaw, Ernesto Serrano-Finetti, Oscar Casas, Ramon Pallas-Areny and Jean-Pilippe Couderc*

282-343 Prediction of Atrial Fibrillation Termination by Catheter Ablation Using Adaptive Frequency Tracking of Atrial ECG Signals
Adrian Luca*, Andrea Buttu, Jean-Marc Vesin, Patrizio Pascale, Laurent Roten, Christian Sticherling and Etienne Pruvot

283-355 ECG-Derived Markers to Identify Patients Prone to Atrial Fibrillation
Adrian Luca*, Sasan Yazdani, Alain Viso, Jean-Marc Vesin, Giulio Conte and Angelo Auricchio

284-471 Latent Variable Analysis of Causal Interactions in Atrial Fibrillation Electrograms
David Luengo* and Victor Elvira

285-253 Regional Conduction Velocity Calculation based on Local Activation Times: A Simulation Study on Clinical Geometries
Bhawna Verma*, Axel Loewe, Armin Luik, Claus Schmitt and Olaf Doessel

286-359 Dominant Atrial Fibrillatory Frequency Estimation using an Extended Kalman Filter
Ebadollah Kheirati Roonizi and Roberto Sassi*
PB3  Heartrate Variability
Room: Pinnacle I

287-404  Non-linear Dynamics of Heart Rate Variability after Superoxide Dismutase Inhibition in Rats
Stanislaw Zajaczkowski* and Tomasz Wierzba

288-438  Physical Conditioning Status Stratification Based on Heart Rate Variability: Principal Component Analysis of Power Spectrum Density Function
Olivassé Nasario-Junior, Paulo Roberto Benchimol-Barbosa* and Jurandir Nadal

289-243  Analysis of Heart Rate Variability Indices with Slowly Changing Heart Rate
Masaki Hoshiyama* and Alan Murray

290-119  Looking for Changes in the Heart Rate of Patients with Neurocardiogenic Syncope
Fatima Maria Helena Simoes Pereira da Silva*, Mariana Adami Leite, Julio Cesar Crescencio, Antonio Carlos Silva Filho and Lourenço Gallo Junior

291-299  Personalized Sedation Level Monitoring in ICU Patients Using Heart Rate Variability
SUNIL BELUR NAGARAJ*, Siddharth Biswal, Valdery Moura Junior, Patrick Purdon and Brandon Westover
Cardiorespiratory Characterization and Analysis

Room: Pinnacle I

Phase Difference between Respiration Signal and Respiratory Modulation Signal from Oscillometric Cuff Pressure Pulses during Blood Pressure Measurement
Diliang Chen, Fei Chen, Alan Murray and Dingchang Zheng*

Cardio-Respiratory Characterization of the Autonomic Balance
Leila Mirmohamadsadeghi*, Nicolas Bourdillon and Jean-Marc Vesin

Sleep/Wake Classification Using Cardiorespiratory Features Extracted from Photoplethysmogram
Parastoo Dehkordi*, Ainara Garde, J Mark Ansermino and Guy A. Dumont

Effect of Chest Compression Leaning on Accelerometry Waveforms
James Russell*, Dana Zive and Mohamud Daya

Comparing ECG Derived Respiratory Signals and Chest Respiratory Signal for the Detection of Obstructive Sleep Apnoea
Nadi Sadr* and Philip de Chazal

Apnoea-Hypopnoea Index Estimation using Craniofacial Photographic Measurements
Hadis Nosrati, Nadi Sadr* and Philip de Chazal

Quality Estimation of Electromechanical Derived Respiration Signals: A Machine Learning Approach
Nasim Alamdari, Kouhyar Tavakolian*, Vahid Zakeri, Reza Fazel-Rezai and Alireza Akhbardeh
Irregular Heartbeats Detection Using Tensors and Support Vector Machines
Alexander Suarez* and Griet Goovaerts

Changes in Non-Invasive Wave Intensity Parameters with Variations of Savitzky-Golay Filter Settings
Nicola Pomella, Mark Rakobowchuk*, Christina Kolyva and Ashraf W. Khir

Denoising and Automated R-peak Detection in the ECG Using Discrete Wavelet Transform
Jonathan Goodfellow*, Omar Escalona, Vivek Kodoth, Ganesh Manoharan and Antonio Bosnjak

Prolonged QT Interval in Neurodevelopmental Rat Model of Schizophrenia
Tibor Stracina*, Marina Ronzhina, Tibor Stark, Jana Ruda, Eva Olsanska, Petr Vesely, Vincenzo Micale and Marie Novakova

Novel Algorithm for Estimation ST-segment Parameters
Maria Reshetnikova*, Sergei Akulov, Aleksandr Fedotov and Anna Akulova

Electrocardiographic Measurements of the QT interval During Embryonic Development in Fertilized Chicken Eggs
Tanveer A. Bhuiyan, Cristian Sevcencu, Johannes J. Struijk, Jørgen K. Kanters and Claus Graff*

Novel Biomarker for Evaluating Ischemic Stress Using an Electrogram Derived Phase Space
Wilson Good*, Burak Erem, Jaume Coll-Font, Dana Brooks and Rob MacLeod

Effect of Sample Rate on saECG Spectrum
Jacob Melgaard*, Claus Graff, Peter Sørensen, Kasper Sørensen, Samuel Emil Schmidt and Johannes Struijk
Applying Quality Index Criterion for Flexible Multi-Detection of Heart Beat Using Features of Multimodal Signals
Mohammad Javad Mollakazemi*, Farhad Asadi and S. Hossein Sadati

Comparison of Intensity-based B-splines and Point-to-Pixel Tracking Techniques for Motion Reduction in Optical Mapping
Jaime Yagüe-Mayans, Conrado J. Calvo, Antonio Cebrián and Jose Millet*
In Silico Assessment of Antiarrhythmic Effects of Drug Ranolazine on Electrical Activity in Human Ventricular Myocardium
Mitra Abbasi* and Sebastian Polak

A New Defibrillation Mechanism: Termination of Reentrant Waves by Propagating Action Potentials Induced by Nearby Heterogeneities
Shuyue Han*, Niels Otani, Valentin Krinski and Stefan Luther

Virtual Reality Visualization of Arrhythmias on a Smartphone
Joachim Greiner, Tobias Oesterlein, Gustavo Lenis* and Olaf Doessel

Effect of Multi-Electrode Configurations on Accuracy of Rotor Detection in the Atria
Laura Martínez, Lucia Romero, Omer Berenfeld, Jose Jalife and Javier Saiz*

Hierarchical Bayesian Modelling of Variability and Uncertainty in Synthetic Action Potential Traces
Ross Johnstone*, Rémi Bardenet, David Gavaghan, Liudmila Polonchuk, Mark Davies and Gary Mirams

Combination of Quantitative Changes in Ionic Components to Enhance the Contractile Force during T-tubule Development
Maiko Wakita*, Hitomi Sano, Yasuhiro Naito and Masaru Tomita

Computational Modelling of Cardiac Electrophysiological Changes in Acute Malaria.
Alan Benson, Michael Colman*, Arun Holden, George Kagugube and Eleftheria Pervolaraki

Two Aspects of Cardiac Alternans – Difference and Correlation Between Them
Wei Wang, Dominic G Whittaker*, Haibo Ni, Kuanquan Wang and Henggui Zhang
Comparison of Ion Channel Gene Expression in the Sinus Node of the Human, Rabbit, Rat and Mouse
Jue Li*, Halina Dobrzynski, Ming Lei and Mark Boyett

Computer Model for Determining the Localized Changes in Ventricle Wall Thickness as a Function of Changing Wall Stress as Determined by Laplace’s Law
Richard Summers*
Design and Implementation of a 2.45 GHz RF Sensor for Non-contacting Monitoring Vital Signs
Hongrui Bo*, Qiang Fu, Lisheng Xu, Yuanzhu Dou and Fleming Lure

Computational Model for Prediction the Occurrence of Steam Pops during Irrigated Radiofrequency Catheter Ablation
Ana González-Suárez*, Enrique Berjano, Jose M. Guerra and Luca Gerardo-Giorda

Monitoring the Heart Rate in Cerebral Oximetry Signals
Iraia Isasi, Unai Irusta*, Elisabete Aramendi, Goiuri Peralta and Erik Alonso
Physionet Challenge II

Thursday, September 14, 2016

Room: Point Grey

322-363 Classification of Normal and Abnormal Heart Sound Recordings through Robust Feature Selection
Arijit Ukil, Soma Bandyopadhyay, Chetanya Puri*, Rituraj Singh, Arpan Pal, Ayan Mukherjee and Debayan Mukherjee

323-252 PCG Classification Using a Neural Network Approach
Iga Grzegorczyk*, Mateusz Soliński, Michał Łepek, Anna Perka, Jacek Rosiński, Joanna Rymko, Katarzyna Stępień and Jan Gieraltowski

324-249 Morphological Determination of Pathological PCG signals by Time and Frequency Domain Analysis
Márton Áron Goda* and Péter Hajas

325-127 Robust Detection of Heart Beats in Multimodal Data using Neural Networks and Boosted Trees
Sachin Vernekar, Deepu Vijayasenan and Rohit Ranjan*

326-144 Classification of Normal/Abnormal Heart Sound Recordings using Temporal Feature Extraction and Machine Learning
Sachin Vernekar, saurabh nair, Deepu Vijayasenan and Rohit Ranjan*

327-210 Using Time-Frequency Features to Recognize Abnormal Heart Sounds
Hsuan-Lin Her* and Hung-Wen Chiu

328-130 Improving Classification Accuracy of Heart Sound Recordings
Xinpei Wang* and Yuanyang Li

329-134 Classification of Heart Sound Recordings Using Convolution Neural Network
Heechang Ryu*, Jinkyoo Park and Hayong Shin

330-341 Identification of Abnormal Heart Sounds
Sasan Yazdani*, Silas Schlatter, Seyyed Abbas Atyabi and Jean-Marc Vesin
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<td>Cheng Shi*</td>
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<td>Power Spectrum the Classification of Heart Sound Recording</td>
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Characteristics of Phonocardiography Waveforms that Influence Automatic Feature Recognition
Scott Stainton, Matthew Dyson, Charalampos Tsimenidis and Alan Murray*

Abnormal Heart Sounds detection based on the Scaled Time-Frequency Representation and Feature Selection
Wenjie Zhang*, Shiwen Deng and Jiqing Han
Plenary

MC  Plenary

14:00

Chair: Guy Carrault and Andrew Blaber
Room: Pinnacle II & III

343-521 Can we use Machine Learning to Predict if a Profiled Lay Rescuer can Successfully Deliver a Shock using a Public Access Automated External Defibrillator?
Raymond Bond*, Peter O’Hare, Hannah Torney, Laura Davis, Bruno Delafont, Hannah McReynolds, Anna McLister, Ben McCartney, Rebecca Di Maio, Dewar Finlay, Daniel Guldenring, James McLaughlin and David McEneaney

344-286 Spatiotemporal Activation Time Estimation Improves Noninvasive Localization of Cardiac Electrical Activity
Matthijs Cluitmans*, Jaume Coll-Font, Burak Erem, Dana Brooks, Pietro Bonizzi, Joël Karel, Paul Volders, Ralf Peeters and Ronald Westra

345-232 A Population of In Silico Models to Face the Variability of Human Induced Pluripotent Stem Cell-derived Cardiomyocytes: the hERG Block Case Study
Michelangelo Paci*, Elisa Passini, Stefano Severi, Jari Hyttinen and Blanca Rodriguez