

M1	Rosanna Degani Young Investigator Finals
	Chairs: Olaf Doessel and Willem Dassen
	Room: 0.4/0.5 Main Auditoriu
1-212	Detecting Mechanical Alternans in the Photoplethysmography
8:45-9:05	Tudor Besleaga*, Nicola Toschi, Antonio Canichella, Andreas Demosthenous, Pier Lambiase, Michele Orini
2-115	Risk Assessment of All-Cause Mortality in Patients with an Implantable Cardioverter Defibrillator Using a Novel QRS Fragmentation Score
9:05-9:25	Griet Goovaerts*, Sibasankar Padhy, Carolina Varon, Bert Vandenberk, Rik Willems, Sabine Van Huffel
3-94	In Silico Safety Pharmacology on Intersubject Variability Population of Models: A Regression Model Approach
9:25-9:45	Ana Maria Sanchez de la Nava*, Alejandro Liberos, Ismael Hernández-Romero, Maria de la Salud Guillem Sánchez, Felipe Atienza, Francisco Fernandez-Aviles, Andreu M. Climent
4-329	Mathematical Modeling of Nonselective Channels: Estimating Ion Current Fractions and Their Impact on Pathological Simulations
9:45-10:05	Eike Moritz Wülfers*, Peter Kohl, Gunnar Seemann

- S21** **Novel Quantification Approaches from Cardiovascular Imaging**
Chairs: Teo Soo Kng and Cristiana Corsi
Room: 0.8 Rome
- 5-41** Evaluation of Left Ventricular Diastolic Function Using 4D Flow Magnetic Resonance Imaging
- 10:45-11:00 Sophia Houriez--Gombaudo-Saintonge*, Emilie Bollache, Gilles Soulat, Youssef Alattar, Jérôme Lamy, Thomas Dietenbeck, Alain De Cesare, Alain Giron, Kevin Bouaou, Umit Gencer, Alban Redheuil, Elie Mousseaux, Yasmina Chenoune, Nadjia Kachenoura
- 6-260** Development of a New Approach for the Assessment of Complex Blood Flow Patterns in the Left Atrium From 4D Flow MRI
- 11:00-11:15 Enrico Soldati*, Thomas Dietenbeck, Alban Redheuil, Alessandro Masci, Sophia Houriez, Gombaudo Saintonge, Nadjia Kachenoura, Cristiana Corsi
- 7-393** Quantification of Left Atrium Fibrosis From Late Gadolinium Enhanced MRI in Atrial Fibrillation
- 11:15-11:30 Alice Andalò*, Claudio Fabbri, Maddalena Valinoti, Alessandro Masci, Cristiana Corsi
- 8-278** Automated Scar Segmentation From Cardiac Magnetic Resonance-Late Gadolinium Enhancement Images Using a Deep-Learning Approach
- 11:30-11:45 Sara Moccia, Riccardo Banali, Chiara Martini, Giuseppe Muscogiuri, Gianluca Pontone, Mauro Pepi, Enrico Caiani*
- 9-218** Semiautomatic Vendor Independent Software for Assessment of Local Arterial Stiffness
- 11:45-12:00 Madalina Negoita, Shima Abdullateef*, Alun D Hughes, Kim H Parker, Ashraf W Khir
- 10-318** Uncalibrated Real-Time Stroke Volume Estimation in MRI Using the Magnetohydrodynamic Effect ?
- 12:00-12:15 Charles-Antoine Robert, Emilien Micard, Julien Oster*

Monday, September 24, 2018

10:45

S22 Special Session: Bioimpedance Monitoring in Cardiovascular Diseases

Chairs: Christophe Smeets and Chris van Hoof

Room: 0.9 Athens

11-397 Bioimpedance for Healthcare and Lifestyle Applications

10:45-11:15 Willemijn Groenendaal*

12-398 A Wearable Thoracic Impedance Sensor for Acutely Decompensated Heart Failure Monitoring

11:15-11:30 Christophe Smeets*

13-399 Wearable Bioimpedance Monitoring During Hemodialysis for Chronic Kidney Disease

11:30-11:45 Melanie Schoutteten*

14-396 An Optimal Electrode Configuration to Measure Forced Expirations Using a Wearable Bioimpedance Device

11:45-12:00 Hélène De Cannière*, Karlien Geboers, Christophe JP Smeets, Willemijn Groenendaal, Seulki Lee, Gabriel Squillace, Lars Grieten, Pieter Vandervoort

15-404 Bioimpedance Monitoring Discussion

12:00-12:15 Christophe Smeets*, Christopher Van Hoof

S23 Cardiovascular Mechanics

Chairs: Joost Lumens and Olaf Doessel

Room: 0.4 Brussels

**16-28 Classification Model of Heart Transplant Outcomes
Based on Features of Left Ventricular Functional
Geometry**

10:45-11:00 Tatiana Chumarnaya*, Sergey P. Mikhaylov, Eduard M. Idov,
Olga Solovyova

**17-235 Using Observed Contrast Motion During Cardiac
Catheterization to Tune Patient Specific Coronary Blood
Flow Simulations**

11:00-11:15 Stephen Moore*, Olivia Smith, Kerry Halupka, Sergiy Zhuk

**18-237 Towards Real-Time 3D Coronary Hemodynamics
Simulations During Cardiac Catheterisation**

11:15-11:30 Stephen Moore*, Kerry Halupka, Sergiy Zhuk

**19-274 Mechano-Chemical Interactions in the Isotonic Twitch:
A Modeling Study**

11:30-11:45 Lauren Dupuis*, Joost Lumens, Theo Arts, Tammo Delhaas

**20-295 Relationship Between Electrical Instability and Pumping
Performance During Ventricular Fibrillation:
Computation Study**

11:45-12:00 Daun Jeong*, Ki Moo Lim

**21-339 Reverse Electrical Remodeling Assessed by High-
Frequency QRS Dyssynchrony and QRS Duration**

12:00-12:15 Pavel Leinveber*, Josef Halamek, Pavel Jurak, Magdalena
Matejkova, Jolana Lipoldova, Miroslav Novak

- S24 Balistocardiography, Seismocardiography, and PPG**
 Chairs: Kouhyar Tavkolian and Johannes Struijk
 Room: 0.5 Paris
- 22-337 Multichannel Seismocardiography: A Novel Method for Investigating the Seismocardiogram**
 10:45-11:00 Kim Munck*, Samuel Emil Schmidt, Kasper Sørensen, Johannes Struijk
- 23-110 Machine Learning Based Classification of Myocardial Infarction Conditions Using Smartphone-derived Seismo- and Gyrocardiography**
 11:00-11:15 Saeed Mehrang*, Mojtaba Jafari Tadi, Olli Lahdenoja, Matti Kaisti, Tuija Vasankari, Tuomas Kiviniemi, Juhani Airaksinen, Mikko Pankaala, Tero Koivisto
- 24-111 Force-Interval Relationships of the Heart Measured With Photoplethysmography During Atrial Fibrillation**
 11:15-11:30 Linda M. Eerikäinen*, Alberto Bonomi, Lukas Dekker, Fons Schipper, Rik Vullings, Ronald M. Aarts
- 25-186 Unsupervised Artefact Detection and Screening Using Emfit Sensor in Patients With Sleep Apnea**
 11:30-11:45 Dorien Huysmans*, Bertien Buyse, Dries Testelmans, Sabine Van Huffel, Carolina Varon
- 26-203 Determining the Respiratory State From a Seismocardiographic Signal--A Machine Learning Approach**
 11:45-12:00 Christian Ulrich*, Martin Jensen, Rolf Hansen, Kouhyar Tavakolian, Farzad Khosrow-Khavar, Andrew Blaber, Kasper Sørensen, Samuel Emil Schmidt
- 27-134 Sleep Apnea Detection Using Pulse Photoplethysmography**
 12:00-12:15 Margot Deviaene*, Jesus Lazaro, Dorien Huysmans, Dries Testelmans, Bertien Buyse, Sabine Van Huffel, Carolina Varon

- S31 Cardiac Function from Imaging**
- Chairs: Nadja Kachenoura and Enrico Caiani
Room: 0.8 Rome
- 28-261** Quantification of the Anatomical Remodelling of the
Ventricles of Arrhythmogenic Right Ventricular
Cardiomyopathy Patients, an MRI Based Imaging Study
- 8:30-8:45 Peter Marinov*, Ernesto Zacur, Pier Lambiase, Vincente Grau,
Blanca Rodriguez, Alfonso Bueno-Orovio, Michele Orini
- 29-167** Characterization of Pulmonary Hypertension using Right
Ventricular Regional Curvedness Derived from CMR
Imaging
- 8:45-9:00 Soo Kng Teo*, Xiaodan Zhao, Ru San Tan, Liang Zhong, Yi Su
- 30-362** A Semiautomated Approach for the Quantification of
the Left Ventricle Chamber Volumes From Cine
Magnetic Resonance Images
- 9:00-9:15 Claudio Fabbri*, Keigo Kawaji, Noreen Nazir, Victor Mor Avi,
Amit Patel, Cristiana Corsi
- 31-169** Reconstruction of Patient-Specific Left Atrium
Geometry From CMR Imaging
- 9:15-9:30 Soo Kng Teo*, Xiaodan Zhao, Ru San Tan, Liang Zhong, Yi Su
- 32-366** Anatomically-Induced Fibrillation in a 3D Model of the
Human Atria
- 9:30-9:45 Mark Potse*
- 33-258** Development of New Left Atrial Anatomical Models for
the Study of the Left Atrial Appendage Implications in
Atrial Fibrillation
- 9:45-10:00 Alessandro Masci*, Lorenzo Barone, Francesca Mazzotti,
Corrado Tomasi, Cristiana Corsi

S32

Technical Progress in ECG Imaging

Chairs: Pietro Bonizzi and Peter van Dam

Room: 0.9 Athens

34-374

Effect of Segmentation Variation on ECG Imaging

8:30-8:45

Jess Tate*, Nejib Zemzemi, Wilson Good, Peter van Dam, Dana Brooks, Rob MacLeod

35-70

Effects of ECG Signal Processing on the Inverse Problem of Electrocardiography

8:45-9:00

Laura Bear*, Yesim Serinagaoglu Dogrusoz, Jana Svehlikova, Jaume Coll-Font, Wilson Good, Eelco van Dam, Rob MacLeod, Emma Abell, Richard Walton, Ruben Coronel, Michel Haissaguerre, Remi Dubois

36-309

Reduction of Effects of Noise on the Inverse Problem of Electrocardiography With Bayesian Estimation

9:00-9:15

Yesim Serinagaoglu Dogrusoz*, Laura R Bear, Jana Svehlikova, Wilson Good, Jaume Coll-Font, Eelco van Dam, Remi Dubois, Robert S MacLeod

37-335

Robustness of Reduced Order Nonparametric Model for Inverse ECG Solution Against Modeling and Measurement Noise

9:15-9:30

Önder Nazım Onak*, Yesim Serinagaoglu Dogrusoz, Gerhard Wilhelm Weber

38-88

Epicardial Isochrones from a New High-Frequency ECG Imaging Technique

9:30-9:45

Pavel Jurak*, Uyên Châu Nguyễn, Ivo Viscor, Petr Andrla, Filip Plesinger, Frits Prinzen, Josef Halamek, Pavel Leinveber

39-343

An algorithm for imaging isochrones of ventricular activation on patient-specific epicardial surface

9:45-10:00

Shijie Zhou*, John Sapp, Amir AbdelWahab, Milan Horacek

S33

Medical Informatics Technology

Chairs: Nuria Ortigosa

Room: 0.5 Paris

40-352

Automatic Diagnoses Detection in Free Text ECG Medical Report

8:30-8:45

Derick Oliveira*, Gabriela Paixão, Eder Figueiredo, Paulo Gomes, Milton Ferreira, Jéssica Canazart, Antonio Ribeiro, Wagner Meira

41-249

Predictive Models for Risk Assessment of Worsening Events in Chronic Heart Failure Patients

8:45-9:00

Maria Carmela Groccia, Danilo Lofaro, Domenico Conforti*, Angela Sciacqua

42-376

Real-Time ECG Monitoring for Patients With Implantable Pacemaker – A Review of Current Status

9:00-9:15

John Wang*

43-78

An Algorithm to Sample an Anatomy With Uncertainty

9:15-9:30

Cesare Corrado*, Steven Williams, Iain Sim, Sam Coveney, Mark O'Neill, Richard Wilkinson, Jeremy Oakley, Richard Clayton, Steven Niederer

44-342

Heart Sounds Obtained With Noncontact Continuous-Wave Echo Doppler

9:30-9:45

Johannes Struijk*, Dagbjört Helga Eiríksdóttir, Ásgerdur Arna Pálsdóttir, Samuel Emil Schmidt

45-276

A Comparative Phonocardiography Study: Two Wavelet Based Methods for Fetal Heart Sound Detection

9:45-10:00

Elisavet Koutsiana*, Leontios Hadjileontiadis, Ioanna Chouvarda, Ahsan Khandoker

S34 AF Drivers & Targets

Chairs: Andreu Climent and Axel Loewe

Room: 0.4 Brussels

46-137 A K-Nearest Neighbour Classifier for Predicting Catheter Ablation Responses Using Noncontact Electrograms During Persistent Atrial Fibrillation

8:45-9:00 Xin Li, Gavin S Chu, Tiago Paggi de Almeida, João Salinet, Amar R Mistry, Zakariyya Vali, Peter J Stafford, Fernando S Schlindwein*, G. André Ng

47-194 Analysis of Panoramic Propagation Patterns Mapped from Patients With Persistent Atrial Fibrillation

9:00-9:15 Nolwenn Tan*, Elizabeth Cheng, Martyn Nash, Martin Stiles, Stephan Willems, Pawel Kuklik, Jichao Zhao

48-138 Dominant Frequency Variability Mapping for Identifying Stable Drivers During Persistent Atrial Fibrillation Using Noncontact Mapping

9:15-9:30 Xin Li, Gavin S Chu, Tiago Paggi de Almeida, João Salinet, Amar R Mistry, Zakariyya Vali, Peter J Stafford, Fernando S Schlindwein*, G André Ng

49-279 Reentrant Activity Detection During Atrial Fibrillation in Activation-Based 2D Mapping Agrees With Phase-Based 3D Mapping

9:30-9:45 Miguel Rodrigo*, Christopher AB Kowalewsky, Andreu M. Climent, Ismael Hernandez-Romero, Tina Baykaner, Wouter-Jan Rappel, Maria S Guilem, Sanjiv M Narayan, Felipe Atienza

50-394 Spatiotemporal Stability of Peak Bipolar Electrogram Entropy Regions in Sustained Human and Animal Atrial Fibrillation: Implications for Atrial Fibrillation Mechanism and Mapping

9:45-10:00 Dhani Dharmapranjani*, Andrew McGavigan, Darius Chapman, Rayed Kutieleh, Shivshankar Thanigaimani, Lukah Dykes, Jonathan Kalman, Prashathan Sanders, Kenneth Pope, Pawel Kuklik, Anand Ganesan

S41 Heart Rate Variability: Methods

Chairs: Michele Orini and Fernando Schindwein

Room: 0.8 Rome

51-146 Vector-Based Analysis of the Similarity Between Breathing and Heart Rate During Paced Deep Breathing

10:15-10:30 Denis Kleyko, Evgeny Osipov, Urban Wiklund*

52-179 Intrinsic Complexity of RR and QT Intervals at the Cellular Level

10:30-10:45 Jiyeong Kim*, Ilya Potapov, Disheet Shah, Jukka Kuusela, Katriina Aalto-Setälä, Esa Räsänen

53-190 Parametric Estimation of Entropy Using Higher Order Markov Chains for Heart Rate Variability Analysis

10:45-11:00 Corrado Ameli*, Roberto Sassi

54-219 Robust Estimation of the Scaling Exponent in Detrended Fluctuation Analysis of Beat Rate Variability

11:00-11:15 Matti Molkkari*, Esa Räsänen

55-289 Validity of Venous Waveform Signal for Heart Rate Variability Monitoring

11:15-11:30 David Hernando*, Reid McCallister, Jesus Lazaro, Kyle Hocking, Eduardo Gil, Bret Alvis, Pablo Laguna, Colleen Brophy, Raquel Bailón

56-321 Investigating Phasic Activity of Time-Varying High-Order Spectra: A Heartbeat Dynamics Study During Cold-Pressure Test

11:30-11:45 Shadi Ghiasi*, Alberto Greco, Mimma Nardeli, Vincenzo Catrambone, Riccardo Barbieri, Pasquale Scilingo, Gaetano Valenza

S42 ECG Processing of Exercise

Chairs: Cees Swenne and Richard Gregg

Room: 0.9 Athens

57-382 Analysis of ECG in Athletes Running in Mountain Route Conditions

10:15-10:30 Pedro Gomis*, Eduard Guasch, Alexandre Perera, Lluís Mont, Pere Caminal

58-143 Signal-Level Fusion with Convolutional Neural Networks for Capacitively Coupled ECG in the Car

10:30-10:45 Christoph Hoog Antink, Erik Breuer, Durmus Umutcan Uguz*, Steffen Leonhardt

59-299 Autonomic Nervous System Effects on the Atrioventricular Conduction Time - Heart Period Relationship During Physical Exercise and Passive Recovery

10:45-11:00 Grégory Blain, Guillaume Ducrocq, Mathilde Peraldi, Olivier Meste*

60-364 Selection of Reliable RR Interval Segments Using Hidden Semi-Markov Models

11:00-11:15 Matthieu Doyen, Di Ge, Guy Carrault*, Alfredo Hernandez

61-210 Evaluation of a Continuous ECG Quality Indicator Based on the Autocorrelation Function

11:15-11:30 Jonathan Moeyersons*, Dries Testelmans, Bertien Buyse, Rik Willems, Sabine Van Huffel, Carolina Varon

62-38 GPU-Based Segmented-Beat Modulation Method for Denoising Athlete Electrocardiograms During Training

11:30-11:45 Amnah Nasim, Edoardo Della Santa, Damiano Tanchi, Agnese Sbröllini, Ilaria Marcantoni, Micaela Morettini*, Laura Burattini

S43 ECG Analysis for AF

Chairs: Leif Sornmo and Juan Pablo Martinez

Room: 0.4 Brussels

63-36 Shape Analysis of Consecutive Beats May Help in the Automated Detection of Atrial Fibrillation

10:15-10:30 Filip Plesinger*, Petr Andrla, Ivo Viscor, Josef Halamek, Veronika Bulkova, Pavel Jurak

64-87 P-Wave Analysis for Atrial Fibrillation Detection Using a Neural Network Clustering Algorithm

10:30-10:45 Reza Firoozabadi*, Richard Gregg, Saeed Babaeizadeh

65-150 The Signal Averaged P-Wave Is Able to Indicate the Clinical State of Atrial Fibrillation Disease

10:45-11:00 Matthias Zink*, Stef Zeemering, Martijn Gilbers, Laurent Pison, Ulrich Schotten

66-266 AF Detection by Exploiting the Spectral and Temporal Characteristics of ECG Signals with the LSTM Model

11:00-11:15 Yen-Chun Chang*, Sau-Hsuan Wu, Li-Ming Tseng, Hsi-Lu Chao, Chun-Hsien Ko

67-31 Atrial Fibrillation Spatiotemporal Complexity Is Affected by Pulmonary Vein Isolation

11:15-11:30 Marianna Meo*, Carole Dumas-Pomier, Méléze Hocini, Michel Haïssaguerre, Rémi Dubois

68-59 Quantitative Evaluation of Temporal Occurrence Patterns of Paroxysmal Atrial Fibrillation

11:30-11:45 Monika Šimaitytė*, Andrius Petrėnas, Vaidotas Marozas, Justinas Bacevičius, Audrius Aidietis, Leif Sornmo

S44

Special Session: Personalized Medicine

Chairs: Pietro Bonizzi and Matthijs Cluitmans

Room: 0.5 Paris

69-81

Imaging-Based Simulations for Predicting Sudden Death and Guiding Ablation

10:15-10:45 Natalia Trayanova*

70-400

Personalization of Biomechanical Models for Early Detection of Disease

10:45-11:00 Nick Van Osta, Feddo Kirkels, Aurore Lyon, Tammo Delhaas, Maarten-Jan Cramer, Arco Teske, Joost Lumens*

71-64

Personalisation of Electromechanical Models: Are We There Yet?

11:00-11:15 Nicolas Cedilnik, Tania Bacoyannis, Maxime Sermesant*

72-63

Personalization of Cellular Electrophysiology Models: Utopia?

11:15-11:30 Michael Clerx*

73-403

Personalized Medicine: Discussion

11:30-11:45 Pietro Bonizzi*, Matthijs Cluitmans

S51

Heart Rate Variability: Applications

Chairs: Roberto Sassi and Urban Wiklund

Room: 0.8 Rome

74-42

The Heart Rate Variability Multifractality Spectrum and not the Power Spectrum Is Altered in Paraplegic Individuals With Low-Level Lesion

12:45-13:00 Paolo Castiglioni*, Giampiero Merati, Andrea Faini

75-113

Heart Rate Variability Analysis During Weaning From Mechanical Ventilation: Models for Prediction of the Weaning Trial Outcome

13:00-13:15 Vessela Krasteva*, Mikhail Matveev, Irena Jekova, Georgi Georgiev

76-148

Multidomain Short-Term Heart Rate Variability Analysis to Detect Single Night Sleep Deprivation on Drivers

13:15-13:30 Jose Gallardo, Giannina Bellone, Augusto Santini*, Daniel Vigo, Mariano Llamado Soria

77-243

Dynamical Landscape of Heart Rhythm in Discerning Erratic Rhythm in Elderly People

13:30-13:45 Danuta Makowiec*, Dorota Wejer, Joanna Wdowczyk, Marta Zarczynska-Buchowiecka, Zbigniew Struzik

78-319

Heart Rate Variability Analysis Guided by Respiration in Major Depression Disorder

13:45-14:00 Spyridon Kontaxis*, Michele Orini, Eduardo Gil, Mar Posadas-De Miguel, Maria Luisa Bernal, Jordi Aguiló, Concepción de la Camara, Pablo Laguna, Raquel Bailón

79-369

Heart Rate Variability Analysis of Normal and Intrauterine Growth Restricted Children Using Sample Entropy

14:00-14:15 Taher Biala*, J. Alexandre Lobo marques, Mahmoud Ehresh, Fernando Schlindwein, Michael Wailoo

S52

Modeling Ion Channels and Cells

Chairs: Stefano Severi and Henggui Zhang

Room: 0.9 Athens

80-224

The Mechanism Underlying Heart Rate and Pacemaking Activity Decline in Developing Rabbit Sino-Atrial Node

12:45-13:00 Azzah Alghamdi*, Craig P Testrow, Dominic G Whittaker, Henggui Zhang

81-267

Mechanism of Sinus Node Dysfunction in Carriers of the E161K Mutation in the SCN5A Gene

13:00-13:15 Ronald Wilders*

82-304

Development and Validation of an In Silico Rabbit Purkinje Cell Action Potential Model: A Step Towards a Drug Safety Testing Tool

13:15-13:30 Jordi Cano*, Julio Gomis-Tena, Alexander Amberg, Lennart Anger, Véronique Ballet, Jean-Michel Guillon, Manuel Pastor, Ferran Sanz, Lucia Romero, Javier Saiz

83-92

Computational Mechanistic Investigation of Chronotropic Effects on Murine Sinus Node Cells

13:30-13:45 Benjamin Winkelmann*, Eike Moritz Wülfers, Callum M. Zgierski-Johnston, Peter Kohl, Jens Timmer, Gunnar Seemann

84-354

Isosbestic Point in Optical Mapping With Di-4-ANBDQPQ Transmembrane Voltage Sensitive Dye

13:45-14:00 ILIJA Uzelac*, flavio fenton

85-156

Inward Rectifier Current Downregulation Promotes Spontaneous Calcium Release in a Novel Model of Rat Ventricular Electrophysiology

14:00-14:15 Harley Stevenson-Cocks*, Michael Colman, Ed White, Alan Benson

S53 AF Detection and Simulation

Chairs: Mark Potse and Gunnar Seemann

Room: 0.4 Brussels

**86-402 Subclinical Atrial Fibrillation Detection and Relevance
(Clinical talk)**

12:45-13:15 Pyotr Platonov*

**87-34 Acute Morphological Changes in P-Wave Morphology
During Pulmonary Vein Isolation in Atrial Fibrillation
Patients**

13:15-13:30 Ali Gharaviri*, Matthias Zink, Simone Pezzuto, Mark Potse,
Stef Zeemering, Rolf Krause, Angelo Auricchio, Ulrich Schotten

**88-297 In Silico Model of SK Channel Gating, Temperature
Dependence, and Calcium Sensitivity**

13:30-13:45 Ilse van Herck*, Bo H. Bentzen, Vincent Seutin, Jussi T.
Koivumäki, Mary M. Maleckar, Neil V. Marrion, Andrew G.
Edwards

**89-291 Stationary and Recurrent Properties of Atrial Fibrillation
Conduction Patterns in Goat**

13:45-14:00 Arne van Hunnik*, Stef Zeemering, Piotr Podziemski, Giulia
Gatta, Sander Verheule, Ulrich Schotten

**90-160 Deep Learning for End-to-End Atrial Fibrillation
Recurrence Estimation**

14:00-14:15 Riddhish Bhalodia, Anupama Goparaju, Tim Sodergren*, Ross
Whitaker, Alan Morris, Evgueni Kholmovski, Nassir
Marrouche, Joshua Cates, Shireen Elhabian

S54 ECG Processing and Artificial Intelligence

Chairs: Peter MacFarlane and Gari Clifford

Room: 0.5 Paris

91-108 Supervised Transfer Learning for Personalized Heart Rate Based Epileptic Seizure Detection

12:45-13:00 Thomas De Cooman*, Carolina Varon, Wim Van Paesschen, Sabine Van Huffel

92-174 Cardiac Fibrosis Detection Applying Machine Learning Techniques to Standard 12-Lead ECG

13:00-13:15 Francisco-Manuel Melgarejo-Meseguer*, Francisco-Javier Gimeno-Blanes, Jose Luis Rojo-Alvarez, Mariela Salar-Alcaraz, Juan-Ramón Gimeno-Blanes, Arcadi García-Alberola

93-202 ECG Rhythm Analysis During Manual Chest Compressions Using an Artefact Removal Filter and Random Forest Classifiers

13:15-13:30 Iraia Isasi*, Ali Bahrami Rad, Unai Irusta, Morteza Zabihi, Elisabete Aramendi, Trygve Eftestøl, Jo Kramer-Johansen, Lars Wik

94-327 Premature Ventricular Conduction Detection and Localization From the ECG Using a Neural Network

13:30-13:45 Alexander Vieira Pereira*, Peter van Dam, Roger Abächerli

95-378 Improving Generalization of Deep Models for Cardiac Disease Detection Using Limited Channel ECG

13:45-14:00 Deepta Rajan*, David Beymer, Girish Narayan

S61

Modeling Ensembles of Cells

Chairs: Gunnar Seeman and Andreu Climent

Room: 0.8 Rome

96-68

A Heterogeneous Formulation of the Himeno et al. Human Ventricular Myocyte Model for Simulation of Body Surface ECGs

14:30-14:45 Axel Loewe*, María Hernández Mesa, Nicolas Pilia, Stefano Severi, Olaf Doessel

97-188

A Novel Model of the Rabbit Atrial Myocyte for the Study of Ca^{2+} Mediated Arrhythmia

14:45-15:00 Maxx Holmes*, Alan P Benson, Oleg Aslanidi, Michael A Colman

98-57

Microscopic Simulation of the Cardiac Electrophysiology: A Study of the Influence of Different Gap Junctions Models

15:00-15:15 Pierre-Elliott Bécue*, Mark Potse, Yves Coudière

99-86

In Silico Populations Optimized on Optogenetic Recordings Predict Drug Effects in Human-Induced Pluripotent Stem Cell Derived Cardiomyocytes

15:15-15:30 Michelangelo Paci*, Elisa Passini, Aleksandra Klimas, Stefano Severi, Jari Hyttinen, Blanca Rodriguez, Emilia Entcheva

100-356

Insights Into the Mechanisms of Calcium Wave Propagation Failure From a Computational Model of the Rabbit Atrial Cardiomyocyte

15:30-15:45 Marcia Vagos*, Jordi Heijman, Hermenegild Arevalo, Ulrich Schotten, Joakim Sundnes

101-139

Geometric Wavelength for Monitoring Dynamic Changes in Repolarization Caused by Time-Varying Parameters

15:45-16:00 Ariane Saliani, Narendra Shivaraman, Vincent Jacquemet*

S62 Special Session: Physics vs Machine Learning Based Approaches in ECGI

Chairs: Linwei Wang and Dana Brooks

Room: 0.9 Athens

102-348 A Common-Ground Review of the Potential for Machine Learning Approaches in Electrocardiographic Imaging Based on Probabilistic Graphical Models

14:30-15:00 Jaume Coll-Font*, Linwei Wang, Dana Brooks

103-144 Electrocardiogram Monitoring and Interpretation: From Traditional Machine Learning to Deep Learning, and Their Combination

15:00-15:15 Saman Parvaneh*, Jonathan Rubin

104-69 Combining Biophysical Modeling and Machine Learning to Predict Location of Atrial Ectopic Triggers

15:15-15:30 Eduardo Godoy, Miguel Lozano, Ignacio Garcia-Fernandez, Rafael Sebastian*

105-75 Deep Generative Modeling and Analysis of Cardiac Transmembrane Potential

15:30-15:45 Sandesh Ghimire*, Linwei Wang

S63

Cardiorespiratory Autonomic Iterations

Chairs: Jean-Philippe Couderc and Jesus Lazaro

Room: 0.4 Brussels

106-45

PCG-Delineator: an Efficient Algorithm for Automatic Heart Sounds Detection in Fetal Phonocardiography

14:30-14:45 Annachiara Strazza, Agnese Sbrollini*, Valeria di Battista, Rita Ricci, Letizia Trillini, Ilaria Marcantoni, Micaela Morettini, Sandro Fioretti, Laura Burattini

107-9

Fetal Developmental Deviations Reflected in a Functional Autonomic Brain Age Score

14:45-15:00 Dirk Hoyer*, Alexander Schmidt, Uwe Schneider, Kathleen Gustafson

108-54

Pilot Study on Electrocardiogram Derived Respiratory Rate Using a Wearable Armband

15:00-15:15 Jesus Lazaro*, Raquel Bailón, Eduardo Gil, Yeonsik Noh, Pablo Laguna, Ki Chon

109-310

Identification of Fetal Cardiac Timing Events by Swarm Decomposition of Doppler Cardiogram Signal

15:15-15:30 Saeed Alnuaimi*, Shihab Jimaa, Yoshitaka Kimura, Georgios Apostolidis, Leontios Hadjileontiadis, Ahsan Khandoker

110-26

Autonomic, Cardiovascular, and Respiratory Responses to Hyperglycemic Stimulus in Healthy Subjects

15:30-15:45 Salvador Carrasco-Sosa, Alejandra Guillén-Mandujano*

111-122

Early Detection of Cheyne-Stokes Breathing via ECG-Derived Respiration in Patients With Severe Heart Failure: A Pilot Study

15:45-16:00 Pauline Guyot*, Bruno Chenuel, El-Hadi Djermoune, Thierry Bastogne

S64 ECG Processing of Ventricular Repolarization

Chairs: Laura Burattini and Luca Mainardi

Room: 0.5 Paris

112-67 A Novel Electrocardiograph for Analysis of Ventricular Repolarisation

14:30-14:45 Laura Cooney*, Peter Macfarlane

113-43 T-Wave Alternans in Partial Epileptic Patients

14:45-15:00 Ilaria Marcantoni, Valeria Cerquetti, Valentina Cotechini, Maeva Lattanzi, Agnese Sbröllini, Micaela Morettini, Laura Burattini*

114-302 Intrauterine Growth Restriction Induced ECG Morphological Differences Measured in Adulthood

15:00-15:15 Nuria Ortigosa*, Merida Rodriguez-Lopez, Raquel Bailón, Alvaro Sepulveda-Martinez, Eduard Gratacós, Fatima Crispi, Pablo Laguna

115-180 Theoretical and Empirical Estimates of V-index Variability

15:15-15:30 Massimo W Rivolta*, Luca Mainardi, Roberto Sassi

116-53 Multiscale Complexity Analysis of Short QT Interval Variability Series Stratifies the Arrhythmic Risk of Long QT Syndrome Type 1 Patients

15:30-15:45 Vlasta Bari*, Beatrice De Maria, Giulia Girardengo, Emanuele Vaini, Beatrice Cairo, Lia Crotti, Paul Brink, Peter Schwartz, Alberto Porta

117-19 An Instantaneous Measure of ECG Signal Quality

15:45-16:00 Sasan Yazdani*, Jean-Marc Vesin

- P71 Modeling Ion Channels, Cells and Fetal Signals**
Room: Main Lobby
- 118-32 A Novel Model of Electrical Action Potentials of Teleost Fish Ventricular Myocytes**
Hamsa Naser*, Dominic G Whittaker, Holly Shiels, Mark Boyett, Henggui Zhang
- 119-65 Mechano-Electric Feedbacks in a New Model of the Excitation-Contraction Coupling in Human Cardiomyocytes**
Nathalie Balakina-Vikulova*, Olga Solovyova, Alexander Panfilov, Leonid Katsnelson
- 120-140 Fibroblasts Induce Calcium Alternans When Coupled to Cardiomyocytes: A Simulation Study**
Maria Teresa Mora, Albert Dasi, Javier Saiz*, Beatriz Trenor, Jose M Ferrero
- 121-62 New Mathematical Model of Electromechanical Coupling in Rat Cardiomyocytes**
Leonid Katsnelson*, Pavel Konovalov, Olga Solovyova
- 122-103 Simultaneous Electrical and Fluorescence Recording of HL-1 Cells Electrical Activity in Response to Extracellular Calcium Stimulation**
Ondrej Svoboda, Larisa Baiazitova*, Vratislav Cmiel, Josef Skopalik, Zdenka Fohlerova, Jaromir Hubalek, Ivo Provaznik
- 123-170 Effects of CaMKII Regulation on Atrial Action Potential Under Oxidative Stress Condition**
Haibo Sui, Qince Li*, Kuanquan Wang, Funebi Francis Ijebu, Yongfeng Yuan, Henggui Zhang
- 124-184 Computational Modeling of Cardiac Metabolism in Atrial Myocytes**
Funebi Francis Ijebu, Qince Li*, Kuanquan Wang, Haibo Sui, Lufang Zhou, Yong Feng, Henggui Zhang
- 125-323 RyRs Coupling Causes a Calcium Leak in Cardiac Cell**
Alexander Ryvkin*, Nikita Markov

- 126-333** Optimization of the O'Hara-Rudy Model of Human Ventricular Action Potential With Respect to Electrolyte Concentrations and Rate Dependence
Chiara Bartolucci*, Elisa Passini, Stefano Severi
- 127-193** Role of I_f (Funny Current) on Biological Pacemaker – Insight From a Ventricular Model
Yacong Li*, Kuanquan Wang, Qince Li, Xiangyun Bai, Henggui Zhang
- 128-367** State-Space Detection of the Impulse Response Gain and Delay From Intrapartum Cardiotocography
Philip Warrick*, Emily Hamilton
- 129-228** Proliferation of Fibroblast Modulates the Action Potential Duration Dispersion: An Atrial Fibrosis Model Using Fractional Diffusion
Juan P Ugarte*, Catalina Tobon, Laura C Palacio, Henry Andrade-Caicedo, Javier Saiz

P72 Modeling Drug Effects and Mutations

Room: Main Lobby

130-58 Sulfur Dioxide Effects on Human Atrial Action Potential. In Silico Study

Catalina Tobon, Juan P Ugarte*, Laura C Palacio, Javier Saiz

131-124 Carbon Monoxide Effects on Electrophysiological Mechanisms of Ventricular Arrhythmogenesis

Moza Al-Owais, Arun Holden*, Chris Peers, Derek Steele, Alan Benson

132-166 Effects of the β -Adrenoceptor Blocker Carvedilol in Short QT Syndrome Caused by N588K Mutation in hERG: A Simulation Study

Cunjin Luo*, Linghua Li, Tong Liu, Kuanquan Wang, Xiangyun Bai, Ying He, Henggui Zhang

133-48 In Silico Investigation of the Functional Impact of SCN10A Mutations in Human Atrial Cells

Inas A Al Nemi*, Haibo Ni, Henggui Zhang

134-133 Modelling the Effects of Propafenone on Human Atrial Patho-Electrophysiology Associated With hERG-Linked Short QT Syndrome

Dominic G Whittaker*, Jules C Hancox, Henggui Zhang

135-213 Impact of Two Different CaV 1.2 Mutations on Cardiac Action Potential and Calcium Content

Gunnar Seemann*, Sebastian Kummer, Susanne Rinné, Niels Decher

P73 Mechanisms of Reentry and Fibrillation

Room: Main Lobby

136-130 Effects of Atrial Fibrillation on the Coronary Flow at
Different Heart Rates: A Computational Approach
Caterina Gallo*, Stefania Scarsoglio, Luca Ridolfi

137-298 Parameter Sensitivity Analysis to Predict Action
Potential Duration Alternans in Cardiac
Electrophysiology Simulation
Nida Dusturia*, Ki Moo Lim

138-225 The Effects of Nonischemic Fibrosis Scar Morphology on
Mechanisms of Reentry
Gabriel Balaban*, Caroline Mendoca Costa, Brian Halliday,
Bradley Porter, Wenjai Bai, Gernot Plank, Christopher Rinaldi,
Daniel Rueckert, Sanjay K. Prasad, Martin Bishop

139-340 Predicting and Observing Chaotic Dynamics in Excitable
Media Using Machine Learning
Ulrich Parlitz*, Roland Zimmermann, Sebastian Herzog, Jonas
Isensee, George Datseris

140-233 Particle Filter Tracking of Complex Stochastic Systems
Applied to In Silico Wavefront Propagation
Gonzalo Ricardo Ríos-Muñoz*, Antonio Artés-Rodríguez,
Joaquín Míguez

P74 Whole Heart Modeling

Room: Main Lobby

- 141-183** Patient-Tailored In Silico 3D Simulations and Models
From Electroanatomical Maps of the Left Atrium
Gonzalo Ricardo Ríos-Muñoz*, Sara Rocher, Antonio Artés-
Rodríguez, Ángel Arenal, Javier Saiz, Carlos Sánchez
- 142-10** A Multiscale Intracranial Pressure Signal Simulator
Federico Wadehn*, David-Jule Mack, Emanuela Keller,
Thomas Heldt
- 143-96** A Support Vector Regression-Based Data-Driven Leaflet
Modeling Approach for Personalized Aortic Valve
Prosthesis Development
Jannis Hagenah*, Tizian Evers, Michael Scharfschwerdt,
Achim Schweikard, Floris Ernst
- 144-47** Impact of Limits in Pathways Between Sinoatrial Node
and Atrium on Heart Rhythm by Timed Automata
Model
Danuta Makowiec*, Zbigniew Struzik
- 145-114** Universal Ventricular Coordinates: A New Way to
Transfer Purkinje Networks Between Meshes
Julien Bouyssier*, Jason Bayer, Edward Vigmond
- 146-223** A Study on the Characteristics Influencing the Pressure
in the Inlet of a One-Dimensional Model of Arterial
Structure
Shima Abdullateef*, Jorge Mariscal-Harana, Jordi Alastruey,
Ashraf Khir
- 147-285** Heart Block in the Athlete – Role of Ion Channel
Remodelling as Studied Using a One-Dimensional
Computational Model of the Atrioventricular Node
Jue Li*, Pietro Mesirca, Alicia D'Souza, Yanwen Wang, Shu
Nakao, Charlotte Cox, Jules Hancox, Matteo Mangoni, Mark
Boyett

148-55

**Optical Mapping Could Reveal Two-Dimensional
Morphology of Atrioventricular Electrical Insulation in
the Foetal Avian Heart**

Veronika Olejnickova*, Oto Janousek, Marina Ronzhina,
Jakub Hejc, Alena Kvasilova, Eva Zabrodska, David Sedmera

P75 Analysis and Mapping in Arrhythmia

Room: Main Lobby

149-172 In-Silico Comparison of Phase Maps Based on Action Potential and Extracellular Potential

Konstantin Ushenin*, Artem Razumov, Vitaly Kalinin, Olga Solovyova

150-296 Trajectories of the Single Moving Equivalent Dipole in Subjects With Left Fascicular Block

Vito Starc*, Cees A. Swenne

151-384 Validation of Noninvasive Electrophysiological Mapping Accuracy Using Endocardial Pacing With Three-Dimensional Nonfluoroscopic Electroanatomic Mapping

Margarita Budanova*, Mikhail Chmelevsky, Stepan Zubarev, Danila Potyagaylo, Boris Rudic, Erol Tulumen, Martin Borggreffe

152-290 QRS Complex Classifier for Personalized Healthcare Applications

Rohit Hadia*, Dewar Finlay, Daniel Guldenring, Ghalib Muhammad Waqas Janjua, Raymond Bond, James McLaughlin

153-109 Unobtrusive Contactless Cardiac Monitoring for Telemedicine and Ambient Assisted Living

Andres Lorenzo Bleda*, Rafael Maestre Ferriz, Arcadio Garcia Alberola

Tuesday, September 25, 2018

16:00

P76 Ischemia and Infarct Analysis with ECG and Imaging

Room: Main Lobby

**154-85 Detection of ST-Segment Variation in ECG Using
Transfer Entropy**

Ilya Potapov*, Esa Räsänen

**155-128 Automatic Segmentation of Myocardial Infarction in
Rats Subjected to Regional Ischemia**

Roman Jakubicek, Jiri Chmelik*, Jan Neckar, Radim Kolar

156-51 High Frequency QRS Analysis From Orthogonal Leads

Josef Halamek*, Pavel Leinveber, Marek Malik, Georg
Schmidt, Filip Plesinger, Magdalena Matejkova, Jolana
Lipoldova, Pavel Jurak

P77 New Approaches and Applications of ECGI

Room: Main Lobby

- 157-381** Evaluation of ECG Imaging Accuracy for Biventricular Pacings in Patients With a Cardiac Resynchronization Therapy Device
Danila Potyagaylo*, Mikhail Chmelevsky, Stepan Zubarev, Margarita Budanova, Vitaly Kalinin, Alexander Kalinin, Dmitry Lebedev
- 158-324** Forcing Transmembrane Voltages to Decrease Slowly: A Temporal Regularization for ECG Imaging
Steffen Schuler*, Axel Loewe, Olaf Doessel
- 159-105** Body-Surface Mapping Using High-Frequency ECG to Characterize Electrical Activation Delay
Petr Andrla*, Pavel Leinveber, Uyên Châu Nguyễn, Ivo Viscor, Filip Plesinger, Frits Prinzen, Josef Halamek, Magdalena Matejkova, Pavel Jurak
- 160-314** A Learning Based Statistical Approach for Combining Multiple Measurements in Electrocardiographic
Taha Erenler*, Yesim Serinagaoglu Dogrusoz
- 161-315** Impact of Signal Preprocessing on the Inverse Localization of the Origin of Ventricular Pacing
Jana Svehlikova*, Jan Zelinka, Yesim Serinagaoglu Dogrusoz, Wilson Good, Milan Tysler, Laura Bear
- 162-265** Automatic Generation of Biventricular Models of Cardiac Electrophysiology for Patient Specific Personalization Using Noninvasive Recordings
Karli Gillette*, Anton Prassl, Jason Bayer, Edward Vigmond, Aurel Neic, Gernot Plank
- 163-101** T-Wave Alternans Analysis With Electrocardiographic Imaging
Jose Luis Rojo-Alvarez*, Rebeca Goya-Esteban, Sergio Muñoz-Romero, Arcadi García-Alberola, Francisco-Manuel Melgarejo-Meseguer, Manuel Blanco-Velasco

- 164-157** ECG Imaging of Ventricular Ischemia Lesions
Vinay Kara*, Haibo Ni, Erick Andres Perez Alday, Henggui Zhang
- 165-182** Electrocardiographic Imaging of Atrial Fibrillation Detects Sites of Acute Termination After Rotor Ablation
Miguel Rodrigo*, Andreu M. Climent, Ismael Hernandez-Romero, Tina Baykaner, Wouter-Jan Rappel, Maria S Guillem, Felipe Atienza, Sanjiv M Narayan
- 166-344** The Heart Recording Conditions Impact the Assessment of the Electrocardiography Imaging Inverse Solution
Amel Karoui*, Laura Bear, Pauline Migerditichan, Mostafa Bendahmane, Nejib Zemzemi
- 167-347** Comparison of Left Ventricle Late Activation Zones Determined Using Noninvasive Electrophysiological Mapping With Sequential CT and MRI
Stepan Zubarev*, Mikhail Chmelevsky, Danila Potyagaylo, Margarita Budanova, Sergey Rud, Anton Ryzhkov, Dmitriy Lebedev
- 168-239** Quantitative Analysis of Rotor Distribution in Atrial Fibrillation via Noninvasive Electrocardiographic Imaging
Roland Sanford*, Jonathan Chrispin, Saman Nazarian, Linwei Wang
- 169-259** An Adaptive Laplacian Based Interpolation Algorithm for Noise Reduction in Body Surface Potential Maps
Ali Rababah*, Dewar Finlay, Daniel Guldenring, Raymond Bond, James McLaughlin

P78 ECG Waveform Analysis

Room: Main Lobby

- 170-287** Correlation and Clustering Properties of Premature Ventricular Contractions in 24-Hour ECGs of Postinfarction Patients
Annette Witt*
- 171-151** Invariant Mean Electrical Axis in Electrocardiogram
Kjell Le*, Trygve Eftestøl, Kjersti Engan, Øyunn Kleiven, Stein Ørn
- 172-46** Integrating the Exercise and Environmental Data into a Digital ECG Structure by Watermarking Technique
Piotr Augustyniak*
- 173-375** Detecting Flutter Waves in the Electrocardiogram Using Generalized Likelihood Ratio Test
Muhammad Haziq Kamarul Azman*, Olivier Meste, Kushsairy Kadir
- 174-95** Spectral-Based Analysis of Progressive Dynamical Changes in the Fetal Heart Rate Signal During Labor by Using Empirical Mode Decomposition
Patricio Fuentealba*, Alfredo Illanes, Frank Ortmeier
- 175-379** Versatile Detector of Pseudo Periodic Patterns
Augusto Santini*, Emiliano Diez, Mariano Llamado Soria
- 176-149** Action Potential Modelling in Isolated Rat Hearts During Hypokalemia
Mariano Llamado Soria, Augusto Santini*, Emiliano Diez

P79 ECG Heterogeneity

Room: Main Lobby

177-162 The Reproducibility of Global Electrical Heterogeneity ECG Measurements

Erick Andres Perez Alday*, Christopher Hamilton, Annabel Lipershi, Jose Manuel Monroy Trujillo, Michelle Estrella, Stephen M sozio, Bernard Jaar, Rulan Parekh, Larisa Tereshchenko

178-177 T-Wave Morphology Restitution in Chronic Heart Failure Patients With Atrial Fibrillation

Flavio Palmieri*, Juan Pablo Martínez, Laura Burattini, Julia Ramírez

179-277 ECG-Based Monitoring of Electrolyte Fluctuations During the Long Interdialytic Interval

Ana Rodrigues*, Andrius Petrėnas, Neda Kušleikaitė-Pere, Pablo Laguna, Vaidotas Marozas

Tuesday, September 25, 2018

16:00

P7A Wavelet Based Analysis of ECG

Room: Main Lobby

180-336 Wavelet Based Algorithm for the Automatic Detection
of Activations in Intracardiac Records in the Presence of
Supraventricular Tachyarrhythmia

Jaime Yagüe-Mayans, Francisco Castells, Javier Moreno, Jose
Millet*, Raquel Cervigón

181-200 An Efficient Algorithm Based on Wavelet Transform to
Reduce Powerline Noise From Electrocardiograms

Juan Ródenas, Manuel García, José J Rieta, Raul Alcaraz*

P7B ECG Fiducial Detection

Room: Main Lobby

- 182-141** Performance Analysis of T-Wave-Offset Detection Algorithms on Patients With Cardiac Diseases
Deborah Nairn*, Pietro Bonizzi, Joël Karel, Alfonso Aranda
- 183-123** R-Peak Detection in Holter ECG Signals Using Non-Negative Matrix Factorization
Pauline Guyot*, Pascal Voiriot, El-Hadi Djermoune, Stéphane Papelier, Céline Lessard, Mathieu Felices, Thierry Bastogne
- 184-155** Twelve Dimensional Vectorcardiography. Is More Better?
Alfonso Aranda*, Pietro Bonizzi, Joel Karel, Ralf Peeters
- 185-82** A Multilead QRS Complex Detection Method on 12-Lead Electrocardiogram Signals
Wei Zhao*, Yanwu Xu, Cong Yan, Jing Hu, Jia Dongya, Hongmei Wang, Tianyuan You
- 186-281** Analysis of the Observation Sequence Duration of Hidden Markov Models for QRS Complex Detection in Single-Lead ECG Recordings
Nelson Monroy*, Miguel Altuve
- 187-52** Real-Time Detection of Pace Pulses in a Single Lead ECG
Irena Jekova*, Serafim Tabakov, Ivo Iliev, Valentin Tsibulko, Krasimira Kostikova

P7C

Denoising ECT

Room: Main Lobby

188-100

Detection of Unicolor ECG Electrode Reversals in Standard 12-Lead ECG

Irena Jekova*, Remo Leber, Vessela Krasteva, Ramun Schmid

189-198

Kalman Filter Based Electromyographic Signal Suppression of Real-Time ECG Signal

Meng Chen*, Yizhou Zhong, Huaiyu Zhu, Yun Pan

190-165

Global Electrical Heterogeneity: Mechanisms and Clinical Significance

Larisa Tereshchenko*

191-209

A Novel Algorithm for Full-Automatic Multipurpose ECG Delineation

Antoun Khawaja*

192-229

A Novel Algorithm for Full-Automatic ECG Interpretation and Diagnostics

Antoun Khawaja*

193-231

Variational Mode Decomposition Features for Heartbeat Classification

Amalia Villa Gómez*, Sibasankar Padhy, Rik Willems, Sabine Van Huffel, Carolina Varon

P7D ECG Mapping

Room: Main Lobby

194-132 Validation of Activation Recovery Interval in Structurally Normal Human Ventricles by Optical Mapping

Peter Langfield*, Josselin Duchateau, Richard Walton, Frederic Sacher, Julien Rogier, Louis Labrousse, Fabien Brette, Meleze Hocini, Michel Haissaguerre, Olivier Bernus, Edward Vigmond

195-286 Sequential Electro-Anatomical Mapping Methodology and Preliminary Results for Reentry Vulnerability Index Estimation

Michele Orini*, Ben Hanson, Peter Taggart, Fernando Campos, Aldo Rinaldi, Jaswinder Gill, Martin Bishop, Pier Lambiase

196-383 Testing a Simple Model of the Unipolar Electrogram in the Intact Human Heart and Examples of Applications

Michele Orini*, Peter Taggart, Pier Lambiase

197-345 Evaluation of Multilead ECG Markers to Track Changes in Dispersion of Ventricular Repolarization in the Intact Human Heart

Michele Orini*, Neil Srinivasan, Peter Taggart, Pier Lambiase

S81 Modeling Arrhythmias and Defibrillation

Chairs: Ed Vigmond and Natalia Trayanova

Room: 0.8 Rome

198-118 Determining Surface Stimulation Parameters With Computational Cardiac Electrophysiology to Defibrillate Human Ventricles

8:30-8:45 Angel Moreno*, Richard Walton, Claudia E. Hawks, Olivier Bernus, Edward Vigmond, Jason Bayer

199-131 Role of Cardiac Microstructure Variability on Ventricular Arrhythmogenesis

8:45-9:00 Dominic G Whittaker*, Alan P Benson, Irvin Teh, Jurgen E Schneider, Michael A Colman

200-385 Phase Space Approach in Quantification of Arrhythmia Induction Caused by Potassium Heterogeneities in Isolated Rabbit Hearts

9:00-9:15 ILIJA Uzelac*, flavio fenton

201-206 A Multiscale Computational Model of Calcium-Mediated Ectopy in the Human Postinfarction Heart

9:15-9:30 Fernando Campos*, Joao F. Fernandes, Yohannes Shiferaw, Titus Kuehne, Rodrigo Weber dos Santos, Martin Bishop, Gernot Plank

202-390 Diastolic-Interval-Based Control as a Method for Preventing Cardiac Tachyarrhythmias

9:30-9:45 Niels Otani*

203-334 Features of Chaotic Transients in Excitable Media Modeling Cardiac Arrhythmias

9:45-10:00 Ulrich Parlitz*, Thomas Lilienkamp

S82 Cardiac Autonomic Iterations

Chairs: Alejandra Guillen and Ivo Provaznik

Room: 0.9 Athens

204-171 Asymmetry Assessment of Cardiac and Sympathetic Arms of the Baroreflex

8:30-8:45 Beatrice De Maria*, Vlasta Bari, Beatrice Cairo, Emanuele Vaini, Elisabeth Lambert, Murray Esler, Mathias Baumert, Sergio Cerutti, Laura Dalla Vecchia, Alberto Porta

205-358 Microgravity Exposure Alters Sympathetic Modulation of Ventricular Repolarization Quantified from the ECG via Periodic Repolarization Dynamics

8:45-9:00 Saúl Palacios*, Enrico Caiani, Juan Pablo Martínez, Esther Pueyo

206-282 ECG-Derived Sympathetic and Parasympathetic Nervous System Dynamics: A Congestive Heart Failure Study

9:00-9:15 Gaetano Valenza*, Luca Citi, Philip Saul, Riccardo Barbieri

207-25 Effects of Two Types of Linearly Increased Isometric Exercise on Instantaneous Baroreflex and Respiratory Sinus Arrhythmia Sensitivities Computed by Alpha Index

9:15-9:30 Alejandra Guillén-Mandujano*, Salvador Carrasco-Sosa

208-273 Relationship Between Blood Pressure and Heart Rate Circadian Rhythms in Normotensive and Hypertensive Subjects

9:30-9:45 Giulia Silveri*, Lorenzo Pascasio, Agostino Accardo

209-61 Analysis of Linear and Nonlinear Central-Cardiorespiratory Coupling Pathways in Healthy Subjects

9:45-10:00 Steffen Schulz*, Aniol Serra Juhé, Beatriz Giraldo, Jens Haueisen, Karl-Juergen Baer, Andreas Voss

S83

Challenge I

Chairs: Gari Clifford and Philip de Chazal

Room: 0.4 Brussels

210-49

You Snooze, You Win: The PhysioNet/Computing in Cardiology Challenge 2018

8:30-8:45

Mohammad Ghassemi, Benjamin Moody, Li-Wei Lehman, Christopher Song, Qiao Li, Haoqi Sun, Brandon Westover, Gari Clifford*

211-332

Automated Recognition of Sleep Arousal Using Multimodal and Personalized Deep Ensembles of Neural Networks

8:45-9:00

Andrea Patane*, Shadi Ghiasi, Enzo Pasquale Scilingo, Marta Kwiatkowska

212-252

Automatic Scoring of Non-Apnoea Arousals Using the Polysomnogram

9:00-9:15

Nadi Sadr*, Philip de Chazal

213-232

Automated Detection of Sleep Arousals From Polysomnography Data Using a Dense Convolutional Neural Network

9:15-9:30

Matthew Howe-Patterson, Bahareh Pourbabaee*, Frederic Benard

214-284

Evaluating Convolutional and Recurrent Neural Network Architectures for Respiratory-Effort Related Arousal Detection during Sleep

9:30-9:45

Niranjan Sridhar*, Ali Shoeb

215-247

Using Auxiliary Loss to Improve Sleep Arousal Detection with Neural Network

9:45-10:00

Bálint Varga, Márton Görög, Péter Hajas*

S84 ECG Processing of Ventricular Repolarization

Chairs: Filip Plesinger and John Wang

Room: 0.5 Paris

216-30 Detecting Strict Left Bundle Branch Block From 12-Lead Electrocardiogram Using Support Vector Machine Classification and Derivative Analysis

8:30-8:45 Nipun Perera*, Chathuri Daluwatte

217-204 An Accurate Shock/No-Shock Decision Algorithm for Use During Piston-Driven Chest Compressions

8:45-9:00 Iraia Isasi*, Unai Irusta, Elisabete Aramendi, Unai Ayala, Erik Alonso, Jo Kramer-Johansen, Trygve Eftestøl

218-216 Identification of Strict Left Bundle Branch Block, Using a Moving Dipole Model

9:00-9:15 Werner Bystrycky*

219-292 Deep Learning Based QRS Multilead Delineator in Electrocardiogram Signals

9:15-9:30 Julià Camps*, Blanca Rodriguez, Ana Mincholé

220-99 Serial ECG Analysis: Absolute Rather than Signed Changes in the Spatial QRS-T Angle Should Be Used to Detect Emerging Cardiac Pathology

9:30-9:45 Agnese Sbröllini*, Marjolein de Jongh, C. Cato ter Haar, Roderick W Treskes, Sumche Man, Laura Burattini, Cees A. Swenne

221-154 A Wavelet-Based Approach for Automatic Diagnosis of Strict Left Bundle Branch Block

9:45-10:00 Alba Martín*, Juan Pablo Martínez

S91 ECGI in Clinical Applications

Chairs: Maria Guillem and Laura Baer

Room: 0.8 Rome

222-325 Personalized Computational Framework to Study Arrhythmia Mechanisms on Top of ECG Image-Detected Substrate

10:15-10:30 Matthijs Cluitmans*, Éric Lluch, Hernán Morales, Jordi Heijman, Paul Volders

223-303 Noninvasive Electrocardiographic Imaging of Scar-Related Ventricular Tachycardia: Association With Magnetic Resonance Scar Imaging

10:30-10:45 Omar Gharbia, Susumu Tao, Albert C. Lardo, Henry Halperin, Linwei Wang*

224-387 Clinical Validation of ECG Image Epi-Endocardial Mapping Accuracy: Single Center Single-Blind Cross-Sectional Study

10:45-11:00 Mikhail Chmelevsky*, Margarita Budanova, Stepan Zubarev, Danila Potyagaylo, Tatiana Treshkur, Dmitry Lebedev

225-311 Complete-Chamber Conduction Velocity Estimation During Arrhythmias

11:00-11:15 Ismael Hernández-Romero*, Alejandro Liberos, Miguel Rodrigo, Carlos Figuera, Maria S Guillem, Francisco Fernández-Avilés, Felipe Atienza, Andreu M. Climent

226-185 Automatic Location of the Atrial Anatomy Under Cumulative Spatial Artifacts Based on ECG Imaging

11:15-11:30 Victor Gisbert, Alejandro Liberos, Ismael Hernandez-Romero, Andreu M. Climent, Felipe Atienza, Maria S Guillem, Miguel Rodrigo*

227-283 Early Results on the Utilisation of ECG-Imaging During Catheter Ablation Procedures for Prediction of Sites of Earliest Activation During Re-entrant Ventricular Tachycardia

11:30-11:45 Michele Orini*, Adam Graham, Mehul Dhinoja, Ross Hunter, Richard Schilling, Anthony Chow, Peter Taggart, Pier Lambiase

S92

Cardiac Arrest & Resuscitation

Chairs: Dewar Finlay and Roger Abacherli

Room: 0.9 Athens

228-93

Deep Learning for Pulse Detection in Out-of-Hospital Cardiac Arrest Using the ECG

10:15-10:30 Andoni Elola*, Elisabete Aramendi, Unai Irusta, Artzai Picón, Erik Alonso, Pamela Owens, Ahamed Idris

229-159

Comparison of Pediatric and Adult ECG Rhythm Analysis by Automated External Defibrillators During Out-of-Hospital Cardiac Arrest

10:30-10:45 Vessela Krasteva*, Sarah Ménétré, Irena Jekova, Todor Stoyanov, Daniel Jost, Benoit Frattini, Sabine Lemoine, Frédéric Lemoine, Vincent Thomas, Jean-Philippe Didon

230-107

A Method to Suppress Chest Compression Artifact Enhancing Capnography-Based Ventilation Guidance During Cardiopulmonary Resuscitation

10:45-11:00 Mikel Leturiondo*, Jose Julio Gutierrez, Sofia Ruiz de Gauna, Jesus Ruiz, Luis Alberto Leturiondo, James Knox Russell, Mohamud Daya

231-97

Finger Photoplethysmography to Monitor Chest Compression Rate During Out-of-Hospital Cardiac Arrest

11:00-11:15 Andoni Elola*, Jon Urteaga, Elisabete Aramendi, Unai Irusta, Erik Alonso, Mohamud Daya, Pamela Owens, Ahamed Idris

232-116

CPR Guideline Chest Compression Depths May Exceed Requirements for Optimal Physiological Response

11:15-11:30 Olibhéar McAlister*, Daniel Guldenring, Dewar Finlay, Raymond Bond, Hannah Torney, Ben McCartney, Laura Davis, Paul Crawford, Adam Harvey

233-246

Estimation of Chest Compression Rate and Detection of Hands-off Intervals During Resuscitation With Automated External Defibrillators

11:30-11:45 Jesus Ruiz, Sofia Ruiz de Gauna*, Pablo Bahillo, Digna María González-Otero, Purificación Saiz, Daniel Alonso, Karlos Ibarguren

S93

Challenge II

Chairs: Gari Clifford and Philip de Chazal

Room: 0.4 Brussels

234-401

Physionet Challenge 2018 - Overview

10:15-10:30 Gari Clifford*

235-257

Automatic Sleep Arousal Detection Using Multimodal Biosignal Analysis

10:30-10:45 Morteza Zabihi*, Ali Bahrami Rad, Simo Särkkä, Serkan Kiranyaz, Aggelos K. Katsaggelos, Moncef Gabbouj

236-40

Automated Sleep Arousal Detection Based on EEG Envelopgrams

10:45-11:00 Filip Plesinger*, Petr Nejedly, Ivo Viscor, Petr Andrla, Josef Halamek, Pavel Jurak

237-89

Detection of Respiratory Effort-Related Arousals Using a Hidden Markov Model and Random Decision Forest

11:00-11:15 János Szalma*, András Bánhalmi, Vilmos Bilicki

238-60

Identification of Arousals With Deep Neural Networks Using Different Physiological Signals

11:15-11:30 Runnan He*, Kuanquan Wang, Yang Liu, Na Zhao, Yongfeng Yuan, Qince Li, Henggui Zhang

239-380

Detection of Sleep Arousals Based on Spatiotemporal Features

11:30-11:45 Muhammad Bilal, Muhammad Rizwan Khan, Hassan Aqeel Khan*, Maham Qureshi, Sajid Saleem, Awais Mehmood Kamboh

S94

ECG Processing and Arrhythmias

Chairs: Paul Rubel and Pyotr Platonov

Room: 0.5 Paris

240-33

Mean Temporal Spatial Isochrones as Marker for Activation Delay in Patients with Arrhythmogenic Cardiomyopathy

10:15-10:30 Rob Roudijk*, Peter Loh, Eelco van Dam, Peter van Dam

241-120

A Hidden Markov Model Approach for Ventricular Fibrillation Detection

10:30-10:45 Borja Altamira, Erik Alonso*, Unai Irusta, Elisabete Aramendi, Mohamud Daya

242-153

A Comparison of ECG Waveform Features for the Classification of Normal and Abnormal Heartbeats

10:45-11:00 Emilien Le Flahat*, Jean-Christophe Billard, Eric Plourde

243-355

Localizing Atrial Flutter Circuit Using Variability in the Vectorcardiographic Loop Parameters

11:00-11:15 Muhammad Haziq Kamarul Azman*, Olivier Meste, Kushsairy Kadir, Decebal Gabriel Latcu

244-163

Real-Time Fusion of ECG and SpO2 Signals to Reduce False Alarms

11:15-11:30 Jianwei Su, Sanchao Liu, Zehui Sun, Bailei Sun, Wenyu Ye, Cadathur Rajagopalan*, Xianliang He

245-91

Respiratory Sinus Arrhythmia in Apnea Patients With Apnea Associated Comorbidities

11:30-11:45 John Morales*, Margot Deviaene, Javier Milagro, Dries Testelmans, Bertien Buyse, Raquel Bailón, Rik Willems, Sabine Van Huffel, Carolina Varon

PA1 Challenge Posters

Room: Main Lobby

246-50 Effectiveness of a Convolutional Neural Network in Sleep Arousal Classification Using Multiple Physiological Signals

Yinghua Shen*

247-126 Automatic Detection of Target Regions of Respiratory Effort-Related Arousals Using Recurrent Neural Networks

Heiðar Már Práinsson*, Hanna Ragnarsdóttir, Guðni Fannar Kristjansson, Bragi Marinósson, Eysteinn Finnsson, Eysteinn Gunnlaugsson, Sigurður Ægir Jónsson, Jón Skírnir Ágústsson, Halla Helgadóttir

248-197 Non-Apnea Arousal Detection Using Multiple-Biological Signals With Time and Frequency Domain Features

Fatih Caglar, Emin Argun Oral*, Ibrahim Yucel Ozbek

249-104 Detecting Respiratory Effort-Related Arousals in Polysomnographic Data Using LSTM Networks

Sven Schellenberger*, Kilin Shi, Melanie Mai, Jan Philipp Wiedemann, Tobias Steigleder, Björn Eskofier, Robert Weigel, Alexander Kölpin

250-152 Automatic Detection of Arousals during Sleep using Multiple Physiological Signals

Saman Parvaneh*, Jonathan Rubin, Ali Samadani, Gajendra Katuwal

251-330 Age and Changes in Extracted Features of Lagged Poincare Plot

Shahab Rezaei, Sadaf Moharreri, Nader Jafarnia Dabanloo, Saman Parvaneh*

252-226 Automatic Detection of Respiratory Effort Related Arousals From Polysomnographic Recordings

Ivan Lazić*, Nikša Jakovljević, Danica Despotović, Tatjana Lončar-Turukalo

- 253-230** Knowledge extraction based on wavelets and DNN for classification of physiological signals: Arousals case
Edwar Macias Toro*, Antoni Morell, Javier Serrano, Jose Lopez Vicario
- 254-83** Sleep Arousal Detection Using End-to-End Deep Learning Method Based on Raw Multi-physiological Signals
Haoqi Li*, Qineng Cao, Yizhou Zhong, Yun Pan
- 255-245** SleepTight: Identifying Sleep Arousals Using Inter- and Intra-Relation of Multimodal Signals
Tanuka Bhattacharjee*, Deepan Das, Shah Nawaz Alam, Achuth Rao M V, Prasanta Kumar Ghosh, Ayush Ranjan Lohani, Rohan Banerjee, Anirban Dutta Choudhury, Arpan Pal
- 256-217** Sleep Arousal Classification Using Autoencoded Physiological Signals and Long Short-Term Memory
Vyckintas Maknickas*, Algirdas Maknickas
- 257-242** Automatic Sleep Arousal Identification From Physiological Waveforms Using Deep Learning
Daniel Miller, Andrew Ward, Nicholas Bambos*
- 258-264** Identification of Sleep Arousal From Physiological Signals Using Machine Learning Classification Algorithms
Vinodhini Ranganathan*, Abijeet Waghmare, Uma Maheshwari Krishnaswamy, Tony Raj
- 259-349** Arousal Detection in Obstructive Sleep Apnea using Physiology-Driven Features
Sandya Subramanian*, Sourish Chakravarty, Shubham Chamadia
- 260-371** Deep Learning with Convolutional Neural Networks for Sleep Arousal Detection
Jia Dongya*, shengfeng yu, Cong Yan, Wei Zhao, Jing Hu, Hongmei Wang, Tianyuan You

- 261-368** Sleep Arousal Detection From Polysomnography Using the Scattering Transform and Recurrent Neural Networks
Philip Warrick*, Masun Nabhan Homsí
- 262-262** Arousal Detection in Multimodal Sleep Recordings Using Hidden Markov Models
Fernando Andreotti*, Oliver Carr, Kirubin Pillay, Navin Cooray, Huy Phan, Maarten De Vos
- 263-256** Application of Recurrent Neural Network for the Prediction of Target Non-Apneic Arousal Regions in Physiological Signals
Naimahmed Nesaragi, Shubha Majumder, Ashish Sharma, Kouhyar Tavakolian*, Shivnarayan Patidar

PA2

CV Mechanics

Room: Main Lobby

- 264-145** Gyrocardiography: A Preliminary Investigation of Cardiac Timings
Parastoo Dehkordi, Kouhyar Tavakolian*, Vahid Zakeri, Farzad Khosrow-Khavar
- 265-386** Multiscale Modelling of Anthracycline Cardiotoxicity in Heart Contraction
Alex Lewalle*, Steven Niederer
- 266-106** A Method for Removing Pacing Artifacts From Ultra-High-Frequency Electrocardiograms
Petr Andrla*, Filip Plesinger, Josef Halamek, Pavel Leinveber, Ivo Viscor, Pavel Jurak
- 267-142** Theoretical and Experimental Reflection Coefficients in Flexible Tubes as a Function of the Mach Number
Alessandro Giudici*, Wisam Hacham, Ashraf W Khir
- 268-22** Modelling Effect of Heart Failure on the Electrical Activity of Sheep Atria
Nouf Alshwaira*, Henggui Zhang
- 269-199** Electro-Mechanical Delay in the Human Heart: A Study on a Simple Geometry
Ekaterina Kovacheva*, Lukas Baron, Olaf Doessel, Axel Loewe

PA3 Heart Rate Variability

Room: Main Lobby

270-181 Can Peak-Picked ECG Be Used for Heart Rate Variability?

Richard Gregg*, Reza Firoozabadi, Saeed Babaeizadeh

271-205 Adding Two Dimensions to Heart Rate Variability Research

Joachim A. Behar*, Ori Shemla, Ido Weiser-Bitoun, Aviv A Rosenberg, Yael Yaniv

272-234 Use of Approximation Entropy for Stratification of Risk in Patients With Chagas Disease

Miguel Vizcardo*, Antonio Ravelo Garcia

273-312 Inhomogeneous Heart Rate Variability Spectral Complexity: A Preliminary Evaluation With Gravitational Stimuli Under Selective Autonomic Blockade

Bolea Juan, Gaetano Valenza*, Raquel Bailón, Esther Pueyo, Riccardo Barbieri

274-14 Detection of Driver's Drowsiness Using New Features Extracted From Heart Rate Variability Signal

Gholamreza Attarodi*, Sahar Matla Nikooei, Nader Jafarnia Dabanloo, Parvin Pourmasoumi, Asghar Tareh

275-12 A Nonlinear Adaptive Level Set for Intravascular Ultrasound Images Segmentation

Mehdi Eslamizadeh, Nader Jafarnia Dabanloo, Gholamreza Attarodi*, Javid Farhadi Sedehi, Mehrdad Mohandespoor

PA4 Atrial Fibrillation

Room: Main Lobby

- 276-11** Classification Atrial Fibrillation Using Stacked Autoencoders Neural Networks
Javid Farhadi Sedehi, Gholamreza Attarodi*, Nader Jafarnia Dabanloo, Mehrdad Mohandespoor, Mehdi Eslamizadeh
- 277-360** Singular Spectrum Analysis of Atrial Activations Dominant Frequency to Predict Atrial Fibrillation Recurrence After Ablation Procedure
Raquel Cervigón*, Javier Moreno, José Millet, Francisco Castells
- 278-365** Prediction of Atrial Fibrillation Recurrence by Pulmonary Vein Electrogram Correlation
Raquel Cervigón*, Javier Moreno, José Millet, Francisco Castells
- 279-221** Action Potential Duration Restitution Kinetics During Atrial Fibrillation Derived From Optical Mapping Recordings in Goat
Vladimir Sobota*, Stef Zeemering, Arne van Hunnik, Piotr Podziemski, Ulrich Schotten, Sander Verheule
- 280-147** Detection of Atrial Fibrillation From Short ECGs: Minimalistic Complexity Analysis for Feature-Based Classifiers
Anara Abdukalikova, Denis Kleyko*, Evgeny Osipov, Urban Wiklund
- 281-90** A Novel Kernel-Based Method for Atrial Fibrillation Diagnosis
Zouhair Haddi*, Bouchra Ananou, Stéphane Delliaux, Mustapha Ouladsine
- 282-201** Application of Joint Notch Filtering and Wavelet Transform for Enhanced Powerline Interference Removal in Atrial Fibrillation Electrograms
Miguel Martínez, Juan Ródenas, José J Rieta, Raul Alcaraz*

- 283-359** Atrial Rotor Modulation by Localized Dofetilide Application: An In Silico Study
Sandra Perez-Buitrago, Juan P Ugarte*, Catalina Tobon
- 284-306** Functional Data Analysis for ECG Recordings of Paroxysmal Atrial Fibrillation Patients Before and After Pulmonary Vein Isolation
Nuria Ortigosa*, Guillermo Ayala, Óscar Cano
- 285-66** Automatic Identification of Atrial Fibrillation by Spectral Analysis of Fibrillatory Waves
Agnese Sbröllini*, Krizia Cicchetti, Alessia De Martinis, Ilaria Marcantoni, Micaela Morettini, Laura Burattini
- 286-268** A Robust Detection Method of Atrial Fibrillation
Jing Hu*, Wei Zhao, Yanwu Xu, Jia Dongya, Cong Yan, Hongmei Wang, Tianyuan You
- 287-377** Interactive Exploration of Left Atrium Population-Level Morphology in Atrial Fibrillation Patients
Tim Sodergren*, Anupama Goparaju, Alan Morris, Evgueni Kholmovski, Nassir Marrouche, Joshua Cates, Shireen Elhabian
- 288-127** Unsupervised k-Mean Classification of Atrial Electrograms From Human Persistent Atrial Fibrillation
Tiago Paggi de Almeida*, Diogo C Soriano, Xin Li, Gavin S Chu, João L Salinet, Fernando S. Schlindwein, Peter J Stafford, G André Ng, Takashi Yoneyama
- 289-294** The Effect of Beat Interval on Ventricular Repolarisation in Atrial Fibrillation
Marwa Al-Karadi*, Antony J Wilkinson, Philip Langley
- 290-320** Multiple P-Wave Morphologies in Paroxysmal Atrial Fibrillation Patients During Sinus Rhythm: A Simulation Study
Dimitris Filos, Paschalis Korosoglou, Dimitrios Tachmatzidis, Nicos Maglaveras, Vassilios Vassilikos, Ioanna Chouvarda*

291-129

Developing an Iterative Tracking Algorithm to Guide a Catheter Towards Atrial Fibrillation Rotor Sources in Simulated Fibrotic Tissue

Prasanth Ganesan, Hussein Zilouchian, Elizabeth Cherry,
Arkady Pertsov, Behnaz Ghoraani*

PA5 Cardiovascular Imaging

Room: Main Lobby

292-76 A Temporal Area Variation Regularized Deep Learning Network for Left Ventricle Segmentation on Cardiac Magnetic Resonance

Gongning Luo, Kuanquan Wang*, Shaodong Cao, Qince Li, Henggui Zhang

293-361 Fetal Pulsed-Wave Doppler Atrioventricular Activity Detection by Envelope Extraction and Processing

Eleonora Sulas, Emanuele Ortu, Monica Urru, Alessandra Cadoni, Roberto Tumbarello, Luigi Raffo, Danilo Pani*

294-73 Dyssynchrony Assessment in Arrhythmogenic Cardiomyopathy With Left Ventricular Involvement

Yolanda Vives-Gilabert, Jorge Sanz, Antonio Cebrián, Raquel Cervigón, Jose Millet*, Esther Zorio, Francisco Castells

PA6

System Study

Room: Main Lobby

- 295-341** The NInFEA Dataset for Noninvasive Fetal Electrocardiography Research
Eleonora Sulas*, Giulia Pili, Emanuele Ortu, Elisa Gusai, Monica Urru, Alessandra Cadoni, Roberto Tumbarello, Luigi Raffo, Danilo Pani
- 296-23** Study of Blood Pressure During Controlled Respiration
Alan Murray*, Masaki Hoshiyama
- 297-241** Cardiovascular Function Analysis of Untreated Hypertensive and Normotensive Participants in Cardiopulmonary Exercise Test
Yahui Zhang*, Zhihao Jiang, Lin Qi, Lisheng Xu, Xingguo Sun, Xinmei Chu, Yanling Liu, Stephen E Greenwald
- 298-307** Approximate Entropy in Analysis of Cardiovascular Response to Lower Body Negative Pressure Test
Agnieszka Strok, Gerard Cybulski*, Anna Gąsiorowska, Wiktor Niewiadomski
- 299-8** Pattern-Segmented Heart Rate Variability Analysis During Fetal Maturation
Alexander Schmidt*, Dirk Hoyer, Uwe Schneider
- 300-20** A Lumped Parameter Model of Airway/Lung Mechanics
Silvia Marconi, Claudio De Lazzari*
- 301-173** Incoherent Synchronization Between Resting State Respiratory Sinus Arrhythmia and Respiratory Movement in Depressed Patients With Suicidal Ideation
Ahsan Khandoker*, Veena Luthra, Yousef Abouallaban, Namareq Widatalla, Herbert F Jelinek, Kyuichi Niizeki, Leontios Hadjileontiadis
- 302-300** Detrended Fluctuation Analysis of Heart and Respiratory Rhythm in Atrial Fibrillation
Janko Zeković*, Šućro Madžgalj, Mirjana Platiša

303-328

Effects of Meditation on Heart Rate Stability

Masaki Hoshiyama*, Alan Murray

PA7 Medical Informatics & Technology

Room: Main Lobby

- 304-269** Breathing Rate Estimation From the Photoplethysmography Using Respiratory Quality Indices
Soumaya Khreis*, Di Ge, Guy Carrault
- 305-72** Pay More Attention with Less Parameters: A Novel 1-D Convolutional Neural Network for Heart Sounds Classification
Yunqiu Xu*, Bin Xiao, Xiuli Bi, Weisheng Li, Junhui Zhang, Xu Ma
- 306-222** Feature-Based Cardiac Cycle Segmentation in Phonocardiogram Recordings
Jussi Taipalmaa, Morteza Zabihi*, Serkan Kiranyaz, Moncef Gabbouj
- 307-44** TWA Simulator: a Graphical User Interface for T-wave Alternans
Micaela Morettini*, Lorenzo Marchesini, Luca Alberto Pettinari, Andrea Tigrini, Ilaria Marcantoni, Agnese Sbrollini, Laura Burattini
- 308-98** Towards Personalized Aortic Valve Prostheses - A Sparse Representation of the Individual Leaflet Shape
Jannis Hagenah*, Michael Scharfschwerdt, Floris Ernst
- 309-191** Effects of Microgravity on Action Potential Wave Propagation in Rat Transmural Ventricle Tissue
Xiangyun Bai*, Kuanquan Wang, Qince Li, Cunjin Luo, Yacong Li, Henggui Zhang
- 310-176** Evaluation of Three-Dimensional Accelerometers for the Study of Left Ventricular Contractility
Mireia Calvo, Jean-Luc Bonnet, Virginie Le Rolle*, Maxime Lemonnier, Shota Yasuda, Wouter Oosterlinck, Alfredo Hernández

- 311-215** Heartbeat Detection Using Three-Axial
Seismocardiogram Acquired by Mobile Phone
Federica Landreani*, Damien Golier, Amin Hossein, Jérémy
Rabineau, Philippe Van de Borne, Enrico Caiani, Pierre-
François Migeotte
- 312-316** A Statistical Comparative Study of
Photoplethysmographic Signals in Wrist-Worn and
Fingertip Pulse-Oximetry Devices
Kais Gadhomi, Kevin Keenan, Tania Pereira*, Rene Colorado,
Karl Meisel, Xiao Hu
- 313-254** Robust Assessment of Photoplethysmogram Signal
Quality in the Presence of Atrial Fibrillation
Tania Pereira*, Kais Gadhomi, Mitchell Ma, Rene Colorado,
Kevin Keenan, Karl Meisel, Xiao Hu
- 314-80** A Computationally Efficient Method to Quantify the
Biometric Properties of Ventricular Repolarization
Irregularities in Healthy and Diseased Human Subjects

PA8

Tissue Modeling

Room: Main Lobby

315-35

Effect of Tissue Elasticity in Cardiac Radiofrequency Catheter Ablation Models

Argyrios Petras*, Massimiliano Leoni, Jose Guerra, Johan Jansson, Luca Gerardo-Giorda

316-280

Detailed Electromechanical Model of Ventricular Wedge

Alexander Kursanov*, Vladimir Zverev, Leonid Katsnelson, Olga Solovyova

317-353

Baseline Fluorescence Removal Optimized for Optical Mapping Measurements

ILIJA Uzelac*, flavio fenton

318-189

Comparison of Depolarization and Repolarization in Mathematical Models of the Left Ventricle and the Thin Longitudinal Ventricular Slice

Anastasia Bazhutina*, Anastasia Khokhlova, Konstantin Ushenin, Olga Solovyova

SB1 Whole Heart Modeling

Chairs: Gernot Plank and Niels Otani

Room: 0.8 Rome

**319-161 A Multiscale Investigation of Global Electrical
Heterogeneity: Effects of Body Habitus, Respiration,
and Tissue Conductivity**

13:45-14:00 Erick Andres Perez Alday*, Haibo Ni, Christopher Hamilton,
Annabel Li-Pershing, Bernard Jaar, Jose M Monroy-Trujillo,
Michelle Estrella, Rulan Parekh, Henggui Zhang, Larisa
Tereshchenko

**320-79 Predicting Activation Patterns in Cardiac
Resynchronization Therapy Patients**

14:00-14:15 Angela Lee, Uyen Chau Nguyen, Justin Gould, Baldeep Sidhu,
Benjamin Sieniewicz, Caroline Mendonca Costa*, Frits
Prinzen, Gernot Plank, Christopher Rinaldi, Kevin Vernooy,
Steven Niederer

**321-271 T-Wave Changes Due to Cardiac Deformation Are
Dependent on the Temporal Relationship Between
Repolarization and Diastolic Phase**

14:15-14:30 Robin Moss*, Eike Moritz Wülfers, Gunnar Seemann

SB2 Sleep and Autonomic Nervous System

Chairs: Carolina Varon and Virginie Le Rolle

Room: 0.9 Athens

322-357 Sensitivity Analysis of a Cardiorespiratory Model for the Study of Responses to Apnea

13:45-14:00 Gustavo Guerrero*, Virginie Le Rolle, Alfredo Hernandez

323-175 Investigating Sleep Fragmentation by Autonomic Arousals in Depressed Patients With Obstructive Sleep Apnea

14:00-14:15 Ahsan Khandoker*, Leontios Hadjileontiadis, Seada Kassie, Taoufik Alsaadi

324-192 The Cardiorespiratory Graph in Sleep Apnea and Associated Comorbidities

14:15-14:30 Carolina Varon*, Margot Deviaene, Dries Hendrikx, Sara Van de Putte, Dries Testelmans, Bertien Buyse, Sabine Van Huffel

325-21 Analysis of U-Shape Patterns in RR-Interval Time Series During Sleep

14:30-14:45 Sasan Yazdani*, Alexandre Cherqui, Nicolas Bourdillon, Gregoire Millet, Jean-Marc Vesin

SB3 Ventricular Arrhythmias: Detection and Ablation

Chairs: Pablo Laguna and Riccardo Barbieri

Room: 0.4 Brussels

**326-37 Fast Detection of Ventricular Tachycardia and
Fibrillation in 1-Lead ECG from 3-Second Blocks**

13:45-14:00 Filip Plesinger*, Petr Andrla, Ivo Viscor, Josef Halamek, Pavel
Jurak

**327-338 Man vs. Machine: Comparison of Manual vs. Novel 12-
Lead ECG Algorithm to Predict the Ventricular
Arrhythmia Origin to Guide Ablation Procedure**

14:00-14:15 Roger Abächerli*, Ramin Ebrahimi, Peter van Dam, Ivo
Strebel, Tobias Reichlin

**328-208 Optimization of a Novel Activation-Repolarization
Metric to Identify Targets for Catheter Ablation**

14:15-14:30 Fernando Campos*, Michele Orini, Ben Hanson, Peter
Taggart, Pier Lambiase, Bradley Porter, Christopher Aldo
Rinaldi, Jaswinder Gill, Martin Bishop

**329-388 Electromechanical Phase Singularity Dynamics During
Cardiac Fibrillation**

14:30-14:45 Jan Christoph*, Flavio Fenton, Stefan Luther

SB4 Analysis of Ischemia

Chairs: Johan deBie and Pavel Leinveber

Room: 0.5 Paris

**330-253 ST Segment Change Classification Based on Multiple
Feature Extraction Using ECG**

13:45-14:00 Hongmei Wang*, Wei Zhao, Yanwu Xu, Jing Hu, Cong Yan, Jia
Dongya, Tianyuan You

**331-18 Temporal Beat-to-Beat Variability of Repolarization
Changes Predict Nonsustained Ventricular Tachycardia
in Ischemic Heart Disease Patients**

14:00-14:15 Jonathan Moeyersons*, Matthew Amoni, Bert Vandenberk,
Carolina Varon, Karin Sipido, Sabine Van Huffel, Rik Willems

**332-305 Electrocardiographic Comparison of Dobutamine and
Bruce Cardiac Stress Testing With High Resolution
Mapping in Experimental Models**

14:15-14:30 Brian Zenger*, Wilson Good, Rob MacLeod

**333-351 Novel Metric Using Laplacian Eigenmaps to Evaluate
Ischemic Stress on the Torso Surface**

14:30-14:45 Wilson Good*, Burak Ereke, Jaume Coll-Font, Brian Zenger,
Dana Brooks, Rob MacLeod

MD Closing Plenary

Chairs: Willem Dassen and Teo Soo Kug

Room: 0.4/0.5 Main Auditoriu

334-39 Assessing a Warping Methodology for the Identification of Increased Cardiovascular Risk Based on the HR Profile Morphology (CTA Winner)

15:30-15:45 Julia Ramírez*, Stefan van Duijvenboden, Pablo Laguna, Esther Pueyo, Andrew Tinker, Pier Lambiase, Patricia Munroe, Michele Orini

335-346 Acute Effects of Respiratory-Gated Auricular Vagal Afferent Nerve Stimulation in the Modulation of Blood Pressure in Hypertensive Patients

15:45-16:00 Harrison Fisher*, Jessica Stowell, Ronald Garcia, Roberta Sclocco, Jill Goldstein, Vitaly Napadow, Riccardo Barbieri

336-288 On Deriving Tidal Volume From Electrocardiogram During Maximal Effort Test

16:00-16:15 Javier Milagro*, David Hernando, Jesus Lazaro, José Antonio Casajús, Nuria Garatachea, Eduardo Gil, Raquel Bailón

337-112 Personalized Modelling Pipeline for Cardiac Electrophysiology Simulations of Cardiac Resynchronization Therapy in Infarct patients

16:15-16:30 Caroline Mendonca Costa*, Aurel Neic, Gernot Plank, Eric Kerfoot, Bradley Porter, Benjamin Sieniewicz, Justin Gould, Baldeep Sidhu, Zhong Chen, Christopher A. Rinaldi, Martin J. Bishop, Steven A. Niederer

