M1  Rosanna Degani Young Investigator Finals

1-169  Comparison between Cardiac Baroreflex Sensitivity Estimates Derived from Sequence and Phase Rectified Signal Averaging Techniques During Head-up Tilt
Beatrice De Maria*, Vlasta Bari, Giovanni Ranuzzi, Laura Dalla Vecchia, Sergio Cerutti, Alberto Porta

2-173  Personalization of Atrial Fibrillation Antiarrhythmic Drug Treatments: a Population of Models Approach

3-70  GPU Implementation of Levenberg-Marquardt Optimization for T1 Mapping
Shufang Liu*, Aurélien Bustin, Darius Burschka, Anne Menini, Freddy Odille

4-429  Development of a Computational Fluid Dynamics Model of the Left Atrium in Atrial Fibrillation on a Patient Specific Basis
Alessandro Masci*, Martino Alessandrini, Luca Dedè, Davide Forti, Filippo Menghini, Corrado Tomasi, Alfio Quarteroni, Cristiana Corsi
A Simple Algorithm for Ventilation Detection in the Capnography Signal During Cardiopulmonary Resuscitation
Mikel Leturiondo*, Jesus Ruiz, Sofia Ruiz de Gauna, Digna M González-Otero, José M Bastida, Mohamud Daya

Chest Compression Metrics During Manual Cardiopulmonary Resuscitation: a Manikin Study
Sofia Ruiz de Gauna*, Digna M González-Otero, James K Russell, Jesus Ruiz, Sara Pelayo, Purificación Saiz

An Investigation into the Use of the Impedance Cardiogram as a Predictor of Manual Chest Compression Efficacy
Olibhéar McAlister*, Dewar D. Finlay, Raymond R. Bond, Daniel Guldenring, Ben McCartney, Laura Davis, Hannah Torney, Paul Crawford, Frances Denny, Rebecca Funston, David McEneaney

Closed-loop Adaptive Filtering for Suppressing Chest Compression Oscillations in the Capnogram during Cardiopulmonary Resuscitation
Mikel Leturiondo*, J.J. Gutiérrez, Sofia Ruiz de Gauna, Sandra Plaza, Jose F Veintemillas, Mohamud Daya

Removing Piston-driven Mechanical Chest Compression Artefacts from the ECG
Iraia Isasi*, Unai Irusta, Elisabete Aramendi, Unai Ayala, Erik Alonso, Jo Kramer-Johansen, Trygve Eftestol
S22  Diagnostic ECG

10-62  9:45-10:00  T-wave Alternans Presence in Young Competitive Athletes – to Be or Not to Be Accepted as a Prognostic Factor?  
Iana Simova*, Ivan Gruev, Giovanni Bortolan, Ivaylo Christov, Sofia Georgieva

11-318  10:00-10:15  Multiscale Multifractal Analysis as a Screening Examination Tool  
Dorota Kokosinska*, Jan Gierałtowski, Jan Żebrowski, Rafał Baranowski

12-116  10:15-10:30  Specificity of New Diagnostic Criteria for Left Ventricular Hypertrophy  
Elaine Clark, Peter Macfarlane*

13-61  10:30-10:45  Detecting ECG Limb Lead-wire Interchanges Involving the Right Leg Lead-wire  
Richard Gregg*, E. William Hancock, Saeed Babaeizadeh

14-186  10:45-11:00  Tensor-based Analysis of ECG Changes Prior to In-Hospital Cardiac Arrest  
Griet Goovaerts*, Sabine Van Huffel, Xiao Hu

15-6  11:00-11:15  Electrocardiographic Parameters Indicating increased Risk of Adverse Events in Diabetics after Coronary Artery Bypass Grafting  
Dimiter Simov, Ivaylo Christov, Iana Simova*, Mikhail Matveev, Ivo Petrov
SA Node & Atrial Conduction

Bradycardic Effects of Mutations in the HCN4 Gene at Different Levels of Autonomic Tone in Humans
Alan Fabbri, Arie O. Verkerk, Stefano Severi, Ronald Wilders*

Electrophysiological Parameters in the Electrical Propagation During Atrial Fibrillation: a Population of Models Study

Asymmetry of Unipolar Electrograms in a Thin Tissue with Epicardial-Endocardial Activation Delay
Eric Irakoze, Halekote Ramesh Chirasvi, Vincent Jacquemet*

Differential Sensitivities of Functionally Calibrated Populations of Atrial Cells to Pro-arrhythmia Markers in Normal Sinus Rhythm versus Chronic Atrial Fibrillation
Marcia Vagos*, Hermenegild Arevalo, Bernardo Lino de Oliveira, Joakim Sundnes, Mary Maleckar

Mechanism of Sinus Bradycardia in Carriers of the 1795insD Mutation in the SCN5A Gene
Ronald Wilders*

A Three-dimensional Computational Model of Action Potential Propagation through a Network of Individual Cells.
Pierre-Elliott Bécue*, Mark Potse, Yves Coudière
S24  Sensors, Seismocardiography and Ballistocardiography

22-140  Wearable Pressure Sensor Array for Health Monitoring
        Matti Kaisti*, Olli Lahdenoja, Tero Hurnanen, Matti Vähä-Heikkilä, Mikko Pänkälä, Tero Koivisto

23-311  Contactless Mapping of Thoracic and Abdominal Movements: Applications for Seismocardiography
        Alexandre Laurin, Pavel Shirkovskiy*, Dominique Chapelle, Ros K. Ing

24-203  Potential of Seismocardiography for Optimization of Cardiac Resynchronization Therapy
        Kasper Sørensen, Ajay Verma, John Zanetti, Samuel Emil Schmidt, Johannes Struijk, Kouhyar Tavakolian*

25-452  Potential of Sesimocardiogram for Non-invasive and Continuous Blood Pressure Monitoring
        Kasper Sørensen, Ajay Verma, Andrew Blaber, John Zanetti, Samuel Emil Schmidt, Johannes Struijk, Kouhyar Tavakolian*

26-381  Signal Detection Accuracy of Digital Accelerometers for Ballistocardiographic Propose
        Nico Jähne-Raden*, Klaus-Hendrik Wolf, Michael Marschollek

27-317  Respiratory Rate Detection Using a Camera as Contactless Sensor
        Luca Iozzia*, Jesus Lazaro, Eduardo Gil, Luca Cerina, Luca Mainardi, Pablo Laguna
S31 Vascular Imaging

28-379 11:30-11:45 3D Computed Tomography Virtual Intravascular Endoscopy in the Diagnostic Assessment of Pulmonary Embolism
Sultan Aldosari*, Zhonghua Sun

29-328 11:45-12:00 Automatic Lumen Segmentation of Intravascular Optical Coherence Tomography Images by Adaptive Thresholding
Ali Pourmodheji*, Arash Taki

30-459 12:00-12:15 Wavelet Analysis for Multiresolution Tissue Characterization in Intracoronary Optical Images
Maysa M G Macedo*, Pedro Nicz, Carlos Campos, Pedro Lemos, Marco Antonio Gutierrez

31-346 12:15-12:30 Coronary CT Angiography-generated Computational Fluid Dynamics in Coronary Stenosis: a Comparison of Diagnostic Value between Left Coronary Bifurcation Angle Measurement and Coronary Lumen Assessment
Zhonghua Sun*, Thanapong Chaichana
Cardiac Rotors in Arrhythmia

Tracking Pivot Point of a Numerically Simulated Meandering Rotor Using Recurrence Period Density Entropy
Shivaram Poigai Arunachalam*, Suraj Kapa, Siva Mulpuru, Paul Friedman, Elena Tolkacheva

Image-based Computational Evaluation of the Competing Effect of Atrial Wall Thickness and Fibrosis on Re-entrant Drivers for Atrial Arrhythmias
Aditi Roy*, Marta Varela, Oleg Aslanidi

Spiral-wave Instability in a Medium with a Gradient in the Fibroblast Density: a Computational Study
Soling Zimik*, Rahul Pandit

Optimized Adjustment of a Reaction-diffusion Model to Case-specific Atrial Physiology: towards Clinical Implementation
Pedro Lind*, Yvonne Richter, Gunnar Seemann, Claudia Lenk, Philipp Maass
S33       Arrhythmias & Exercise

36-413   11:30-12:00
Cardiac Computing and Prevention of Sudden Cardiac Death in Athletes (Clinical Talk)
Frederic Schnell*

37-315   12:00-12:15
RR Stress Test Time Series Classification Using Neural Networks
Wilson Jaramillo*, Darwin Astudillo-Salinas, Lizandro Solano-Quinde, Kenneth Palacio-Baus, Sara Wong

38-430   12:15-12:30
Evaluation of Changes in T-wave Alternans Induced by 60 Days of Immobilization by Head-down Bed-rest
Alba Martin*, Violeta Monasterio, Pablo Laguna, Juan Pablo Martínez, Enrico Caiani
Sudden Cardiac Death

**39-243**  
11:30-11:45  
Optimisation of the Global Re-entry Vulnerability Index to Minimise Cycle Length Dependency and Prediction of Ventricular Arrhythmias During Human Epicardial Sock Mapping  
Michele Orini*, Peter Taggart, Martin Hayward, Pier Lambiase

**40-388**  
11:45-12:00  
Influence of KCNQ1 S140G Mutation on Human Ventricular Arrhythmogenesis and Pumping Performance  
Daun Jeong*, Ki Moo Lim

**41-280**  
12:00-12:15  
Automatic Coordinate Prediction of the Exit of Ventricular Tachycardia from 12-Lead Electrocardiogram  
Prashnna Gyawali*, Shuhang Chen, Huafeng Liu, B. Milan Horacek, John L. Sapp, Linwei Wang

**42-345**  
12:15-12:30  
Electrical and Anatomical Imaging of Arrhythmogenic Substrates for Scar-related Ventricular Tachycardia  
Omar Gharbia*, Susumu Tao, Albert C. Lardo, Henry Halperin, Linwei Wang
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<td>S41</td>
<td>Imaging for EP Interventions</td>
<td>Tuesday, September 26, 2017</td>
<td>8:30</td>
<td>Erwan Donal*</td>
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<td>43-479</td>
<td>Prediction of Response to Cardiac Resynchronization Therapy: the Value of Cardiac Work When Compared to Other Dyssynchrony Parameters (Clinical Talk)</td>
<td>8:30-9:00</td>
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<td>Erwan Donal*</td>
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<td>44-466</td>
<td>Integration of Electrical, Structural, and Anatomical Imaging for the Guidance of Cardiac Resynchronization Therapy</td>
<td>9:00-9:15</td>
<td></td>
<td>Uyen Chau Nguyen*</td>
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<td>45-436</td>
<td>Preliminary Computational Framework to Map MRI-Derived Markers to Predict Response to Cardiac Resynchronization Therapy</td>
<td>9:15-9:30</td>
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<td>Carolina Vallecilla*, Martino Alessandrini, Claudio Fabbri, Corrado Tomasi, Cristiana Corsi, Stefano Severi</td>
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<td>47-306</td>
<td>A Comprehensive Toolkit for Analysis of Atrial Wall</td>
<td>9:45-10:00</td>
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<td>Orod Razeghi*, John Whitaker, Rashed Karim, Steven Niederer</td>
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Detection of Atrial Fibrillation

Detection of Atrial Fibrillation Using an Earlobe Photoplethysmographic Sensor

Thomas Conroy*, Jairo Hernandez Guzman, Burr Hall, Gill Tsouri, Jean-Philippe Couderc

Photoplethysmogram Modeling During Paroxysmal Atrial Fibrillation: Detector Evaluation

Andrius Sološenko*, Andrius Petrėnas, Vaidotas Marozas, Leif Sörnmo

Validating Features for Atrial Fibrillation Detection from Photoplethysmogram under Hospital and Free-living Conditions

Linda M. Eerikäinen*, Lukas Dekker, Alberto G. Bonomi, Rik Vullings, Fons Schipper, Jenny Margarito, Helma M. de Morree, Ronald M. Aarts

Signal Quality Assessment of F-waves in Atrial Fibrillation

Mikael Henriksson*, Andrius Petrėnas, Vaidotas Marozas, Frida Sandberg, Leif Sörnmo

Atrial Fibrillation Detector for Wearable Recording Devices Based on Support Vector Machines


Identification of Atrial Fibrillation Episodes Using a Camera as Contactless Sensor

Valentina Corino*, Luca Iozzia, Andrea Mariani, Giacomo D'Alessandro, Claudia D'Ettoorre, Luca Cerina, Giorgio Scarpini, Federico Lombardi, Luca Mainardi
ECG Imaging

8:30-8:45
54-337
A 64-Lead Body Surface Potential Mapping System
João Salinet*, Victor Marques, Marcelo Mazzeto, Erick Camargo, Carlos Pastore, Idágene Cestari

8:45-9:00
55-387
ECG-Based Reconstruction of Heart Position and Orientation with Bayesian Optimization
Jaume Coll-Font*, Dana Brooks

9:00-9:15
56-391
Effect of the Geometric Inaccuracy in MARS-based Inverse ECG Solution Approach
Önder Nazım Onak*, Yeşim Serinağaoğlu Doğrusöz, Gerhard Wilhelm Weber

9:15-9:30
57-347
Exploring Possible Choices of the Tikhonov Regularization Parameter for the Method of Fundamental Solution in Electrocardiography
Judit Chamorro-Servent*, Rémi Dubois, Yves Coudière

9:30-9:45
58-305
L_0 Norm Based Sparse Regularization for Non-invasive Infarct Detection Using ECG Signal
Sandesh Ghimire*, Linwei Wang

9:45-10:00
59-404
Inverse Localization of Intraventricular Pacing Sites by Equivalent Dipole Source
Jana Svehlikova*, Milan Tysler
Predictive Modeling of Cardiac Cells

Carlos Ledezma*, Benjamin Kappler, Veronique Meijborg, Bas Boukens, Marco Stijnen, PJ Tan, Vanessa Diaz-Zuccarini

Identification of Parameters Describing Phenomenological Cardiac Action Potential Models using Sigma-point Methods
Jesus Fernandez-Bes*, David Adolfo Sampedro-Puente, Esther Pueyo

In Silico Assessment of Nifedipine Effects on Human Heart Cells: Pharmacokinetic-pharmacodynamic Analyses at the Population Level
Mitra Abbasi*, Sebastian Polak

Sensitivity Analysis of the QT and JTpeak Intervals from a High-resolution Human Left-ventricular Wedge Model
Massimo W Rivolta*, Roberto Sassi, Viatcheslav Gurev, John J Rice, Coeli M Lopes, Jean-Philippe Couderc

Estimation of Drug Parameters for in Silico MEA/hiPSC-CM Asays
Julien Bouyssier, Nejib Zemzemi*

IKs Computational Modeling to Enforce the Investigation of D242N, a KV7.1 LQTS Mutation
Chiara Bartolucci*, Cristina Moreno, Anna Oliveras, Carmen Muñoz, Alicia de la Cruz, Diego A. Peraza, Juan R Gimeno, Mercedes Martín-Martínez, Stefano Severi, Antonio Felipe, Pier D Lambiase, Teresa Gonzalez, Carmen Valenzuela
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<td><strong>Challenge I</strong></td>
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<td>66-469</td>
<td>AF Classification from a Short Single Lead ECG Recording:</td>
<td>Gari Clifford*, Chengyu Liu, Benjamin Moody, Ikaro Silva, Qiao Li, Alistair Johnson, Roger Mark</td>
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<td>the Physionet Computing in Cardiology Challenge 2017</td>
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<td>67-138</td>
<td>Robust ECG Signal Classification Using Neural Networks Enhanced by Novel Data Synthesis Models</td>
<td>Zhaohan Xiong*, Martin Stiles, Jichao Zhao</td>
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<td>68-120</td>
<td>Heart Rhythm Classification using Short-term ECG Atrial and Ventricular Activity Analysis</td>
<td>Sasan Yazdani*, Priscille Laub, Jean-Marc Vesin</td>
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<td>69-247</td>
<td>Enhancing The Performance of Atrial Fibrillation Detection by Boosting and Stacking Techniques</td>
<td>Dawid Smoleń*</td>
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<td>11:30-11:45</td>
<td>Using a Random Forest Classifier</td>
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<td>71-60</td>
<td>A Convolutional Recurrent Neural Network for Atrial Fibrillation Detection in Single Lead ECGs</td>
<td>Martin Zühlmann*, Dmytro Perekrestenko, Michael Tschannen</td>
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SS2 Long Term Monitoring

72-473 10:30-11:00
Targeted Cardio-respiratory Rhythms Monitoring Used as Decision Support System in Neonatology (Clinical Talk)
Patrick Pladys*, Guy Carrault, Alfredo Hernandez, Alain Beuchée

73-458 11:00-11:15
Wrist and Arm Body Surface Cardiac Electrogram Mapping Techniques Study for Long-term Rhythm Monitoring
Omar Escalona, Louise McFrederick*, Maira Borges, Pedro Linares, James McLaughlin, David McEneaney

74-464 11:15-11:30
Arm-ECG Signal Enhancement Methods for Wearable Long-term Heart Rate and Rhythm Monitoring
William David Lynn, Omar Escalona*, David McEneaney

75-212 11:30-11:45
Distant Pulse Measurement System for Real-Time Surveillance Applications
Jaromir Przybyło, Mirosław Jabłoński, Eliasz Kańtoch*, Piotr Augustyniak, Anna Musiał, Wojciech Gumuła
Noninvasive Electrocardiographic Imaging for Individuals at Risk for Idiopathic Ventricular Fibrillation (Clinical Talk)
Paul Volders*

Evaluation of Inverse Problem with Slow-Conducting Channel in Scar Area in a Post-Infarction Model
Zexi Chen, Miguel Rodrigo*, Alejandro Liberós, Ismael Hernández-Romero, Jesus Requena, Andreu M. Climent, María de la Salud Guillem Sánchez

A Volumetric Inverse Model Formulation Based on Transmembrane Current Sources
Yves Coudière*, Mark Potse, Lisl Weynans

On the Correctness of the Transmembrane Potential Based Inverse Problem of ECG
Vitaly Kalinin*, Alexander Kalinin, Walther Schulze, Danila Potyagaylo, Alexander Shlapunov
MRI-Based Cardiac Mechanics

**80-172**
10:30-10:45
Assessment of Aortic Pulse Wave Velocity Using 4D Flow Magnetic Resonance Imaging: Methods Comparison
Sophia Houriez--Gombaud-Saintonge*, Elie Mousseaux, Ioannis Bargiotas, Alain De Cesare, Thomas Dietenbeck, Kevin Bouaou, Alban Redheuil, Gilles Soulat, Umit Gencer, Yasmina Chenoune, Nadjia Kachenoura

**81-88**
10:45-11:00
Bayesian Classification Applied to Strain in Arrhythmogenic Left-Ventricle Cardiomyopathy
Yolanda Vives-Gilabert*, Begoña Igual, Santiago Jiménez, Jorge Sanz, Raquel Cervigón, Antonio Cebrián, Jose Manuel Santabárbara, José Millet, Esther Zorio, Francisco Castells

**82-180**
11:00-11:15
Relative Aortic Blood Pressures Using 4D Flow MRI: Associations with Age and Aortic Tapering
Kevin Bouaou*, Ioannis Bargiotas, Gilles Soulat, Thomas Dietenbeck, Sophia Houriez-Gombaud-Saintonge, Alain De Cesare, Umit Gencer, Alain Giron, Alban Redheuil, Didier Lucor, Elie Mousseaux, Nadjia Kachenoura

**83-396**
11:15-11:30
Semi-automated Detection of Time-varying Contour for the Quantification of Mitral and Aortic Flow by Phase Contrast MRI
Enrico Caiani*, Federica Landreani, Giovanni Riso, Pierre Vaida, Pierre-François Migeotte

**84-34**
11:30-11:45
Deep Learning in Left Ventricles Localization in MRI Cardiac Images
Abdulkader Helwan*
Tuesday, September 26, 2017

**Poster Session: Phonocardiography**

**85-290**  
12:30-14:30  
Classification of Congenital Heart Disease Using SVM-MFCC from Phonocardiograph  
Gholamreza Attarodi*, Asghar Tareh, Nader Jafarnia Dabanloo, Keivan Maghooli

**86-296**  
14:30-16:30  
Detection of Aortic Stenosis from PCG Signals Using Wavelet Packet Decomposition (WPD) and Parametric Models  
Nader Jafarnia Dabanloo*, Pegah Derakhshan Mehr, Gholamreza Attarodi, Keivan Maghooli

**87-76**  
16:30-18:30  
Second Heart Sound Onset to Identify T-Wave Offset  
Agnese Sbrollini*, Marta Beghella Bartoli, Angela Agostinelli, Micaela Morettini, Francesco Di Nardo, Sandro Fioretti, Laura Burattini
Tuesday, September 26, 2017

P62  Poster Session: ECG Criteria And Signal Processing

88-353  12:30-14:30
Heartbeat Detection Using Oscillatory Envelope Pattern in Noisy Electrocardiogram
Hsiao-Lung Chan*, Yi-Sheng Lee, Chun-Li Wang

89-324  14:30-16:30
ECG-Based Predictors of Sudden Cardiac Death in Chagas’ Disease
Alex Chaves Alberto*, Gabriel Azevedo Limeira, Roberto Coury Pedrosa, Vicente Zarzoso, Jurandir Nadal

90-7  16:30-18:30
Fine Tuning of the Dynamic Low-pass Filter for Electromyographic Noise Suppression in Electrocardiograms
Ivaylo Christov, Tatiana Neycheva, Ramun Schmid*

91-407  18:30-20:30
Robust Automatic Detection of P Wave and T Wave in Electrocardiogram
Dimitrios Zavantis, Ermioni Mastora, George Manis*

92-363  20:30-22:30
Information Theory Based Evaluation of Interactions between RR and QT Intervals in the Normal and People with High Risk for Cardiac Arrhythmias
Chenxi Li*, Yue Pan, Ping Zhan, Zhigang Wang, Zhengguo Zhang, Yi Peng

93-96  22:30-0:30
Beyond HRV: Analysis of ECG Signals using Attractor Reconstruction
Jane Lyle*, Philip Aston, Manasi Nandi, Esther Bonet-Luz

94-30  0:30-2:30
Irregular Heart Beat Detection Using Sequentially Truncated Multi-Linear Singular Value Decomposition
Alexander Suarez*, Griet Goovaerts, Carolina Varon, Carlos R. Vazquez Seisdedos, Sabine Van Huffel

95-231  2:30-4:30
A Novel Method for Deriving the 12-Lead ECG from Body Surface Potential Maps
Laura Bear*, Peter Huntjens, Mark Potse, Josselin Duchateau, Sylvain Ploux, Remi Dubois

96-238  4:30-6:30
New Improved Methodology for ECG Signal Compression
Rupali Tornekar*, Suhas Gajre
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<td>Comparative Study of Lossless ECG Signal Compression Techniques for Wireless Networks</td>
<td>Rupali Tornekar, Suhas Gajre*</td>
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<td>98-110</td>
<td>Attenuation of QRS Power in Frequency Range 0.040-1 kHz</td>
<td>Josef Halamek*, Pavel Leinveber, Filip Plesinger, Magdalena Matejkova, Pavel Jurak</td>
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<td>99-365</td>
<td>A Robust Detection Method of Short Atrial Fibrillation Episodes</td>
<td>Zouhair Haddi*, Jean-François Pons, Stéphane Delliaux, Bouchra Ananou, Jean-Claude Deharo, Ahmed Charai, Rachid Bouchakour, Mustapha Ouladsine</td>
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**Poster Session: Ventricular Arrhythmias**

**P63 12:30**

**100-274 12:30-14:30**

**Prediction of Ventricular Tachycardia Using Nonlinear Features of Heart Rate Variability and Artificial Neural Network Classifier**

Nastaran Ehtiati, Gholamreza Attarodi*, Nader Jafarnia Dabanloo, Ali Moti Nasrabadi, Javid Farhadi Sedehi

**101-253 14:30-16:30**

**Prediction of the Exit Site of Ventricular Tachycardia Based on Different ECG Lead Systems**

Michał Kania*, Yves Coudière, Hubert Cochet, Pierre Jaiï, Mark Potse

**102-51 16:30-18:30**

**Non Invasive Assessment of Spatiotemporal Organization of Ventricular Fibrillation through Principal Component Analysis**

Marianna Meo*, Mark Potse, Stéphane Puyo, Laura Bear, Mélèze Hocini, Michel Haïssaguerre, Rémi Dubois

**103-376 18:30-20:30**

**Computational Study of the Effect of KCNJ2 E299v Mutation on Ventricular Arrhythmogenesis and Electromechanics**

Jiyeong Lee*, Yoo Seok Kim, Ki Moo Lim

**104-255 20:30-22:30**

**Prediction of Ventricular Fibrillation from HRV Signals Using Combination of Genetic Algorithm and Neural Networks**

Javid Farhadi Sedehi, Nader Jafarnia Dabanloo*, Gholamreza Attarodi

**105-46 22:30-0:30**

**Effect of Different Ventricular Arrhythmia Origin on Cardiac Sound Variability using M-mode Signal Representation**

Raúl Ortiz-Puente*, Margarita Sanromán-Junquera, Sergio Muñoz-Romero, Mercedes Ortiz, Jose Luis Rojo-Alvarez, Jesús Almendral-Garrote
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<td>Atrial Electro-anatomic Mapping with a Novel Noncontact Approach</td>
<td>Shu Meng*, Jichao Zhao, Nigel Lever, Gregory Sands, Laura Bear, Anne Gillis, Bruce Smaill</td>
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<td>106-291 14:30-16:30</td>
<td>Dual-sided Mapping During Global Stretch Using a Custom Miniaturized Endocardial Balloon with a Multipurpose Multichannel Acquisition System for Preclinical Electrophysiological Studies</td>
<td>Conrado J. Calvo*, Alvaro Tormos, Eduardo Roses, Manuel Zarzoso, Antonio Cebrián, Santiago Jimenez, Elena Simarro, Jaime Yagüe, José Millet, Javier Chorro, Antonio Guill</td>
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<td>109-431 18:30-20:30</td>
<td>A High Resolution Bi-atrial Optical Mapping System for the Analysis of Arrhythmia in the Hypertensive Heart</td>
<td>Girish Ramlugun*, Gregory Sands, Jichao Zhao, Ian LeGrice, Bruce Smaill</td>
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<td>110-13 20:30-22:30</td>
<td>Doppler Based Algorithm for Reconstructing the Origin of the Drifting Rotor Due to Spatial Temperature Gradients</td>
<td>Guy Malki*, Sharon Zlochiver</td>
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<td>111-367 22:30-0:30</td>
<td>Design and Presenting of a Novel Algorithm Using Anfis for New Generation of Cardiac Pacemakers</td>
<td>Asghar Dabiri Aghdam, Nader Jafarnia Dabanloo, Mohammad Sattari, Gholamreza Attarodi*</td>
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<td>112-48 0:30-2:30</td>
<td>Study on the Alternatives to Reduce High-Frequency Noise from Invasive Recordings of Atrial Fibrillation</td>
<td>Miguel Martínez, Juan Ródenas, Raul Alcaraz, José J Rieta*</td>
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<td>2:30-4:30</td>
<td>Application of the Stationary Wavelet Transform to Reduce Power-line Interference in Atrial Electrograms</td>
<td>Miguel Martínez, Juan Ródenas, Raul Alcaraz, José J Rieta*</td>
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<td>6:30-8:30</td>
<td>Comparison of Convolutional Neural Network and Deep Neural Network Approaches for ECG Signal Classification</td>
<td>Sonia Thomas*, Sael Lee</td>
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<td>8:30-10:30</td>
<td>Heart Arrhythmia Classification Using Extracted Features in Poincare Plot of RR Intervals</td>
<td>Shahab Rezaei*, Sadaf Moharreri</td>
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<td>10:30-12:30</td>
<td>Discontinuous Conduction through the Heterogeneous Purkinje-Ventricular Junction under the Short QT Syndrome Variant 3</td>
<td>Cunjin Luo*, Kuanquan Wang, Henggui Zhang</td>
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<td>14:30-16:30</td>
<td>Wavelet Based Algorithm for the Automatic Detection of Activations in Intracardiac Records in the Presence of Supraventricular Tachyarrhythmia</td>
<td>Jaime Yagüe-Mayans*, Francisco Castells, Javier Moreno, José Millet Roig, Raquel Cervigón</td>
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<td>16:30-18:30</td>
<td>Atrial Fibrillation Analysis for Real Time Patient Monitoring</td>
<td>Ragheed Allami, Andrew Stranieri, Herbert F Jelinek, Faezeh Marzbanrad*, Venki Balasubramanian</td>
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P65  Poster Session: Atrial Modelling

121-122  12:30-14:30  A Spatially Extended Model of the Human Atrioventricular Node  Mikael Wallman*, Frida Sandberg

122-218  14:30-16:30  Pace-and-Drive of the Human Sinoatrial Node a Preliminary Computational Investigation  Alan Fabbri*, Axel Loewe, Ronald Wilders, Stefano Severi

123-219  16:30-18:30  Effects of the Small Conductance Calcium-Activated Potassium Current (IsK) in Human Sinoatrial Node  Alan Fabbri*, Michelangelo Paci, Jari Hyttinen, Ronald Wilders, Stefano Severi

124-310  18:30-20:30  In Silico Analysis of the Effects of Fibroblasts Coupling to Atrial Myocytes under Conditions of Atrial Fibrillation Remodeling  Jorge Sánchez*, Beatriz Trenor, Javier Saiz


126-26  22:30-0:30  Maximization of Left Atrial Information through the Optimization of ECG Lead Systems  Axel Loewe*, Sebastian Debatin, Gustavo Lenis, Olaf Doessel
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<td><strong>127-118</strong> An Interactive Virtual Reality Environment for Analysis of Clinical Atrial Arrhythmias and Ablation Planning</td>
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<tr>
<td>Axel Loewe*, Emanuel Poremba, Tobias G. Oesterlein, Nicolas Pilia, Micha Pfeiffer, Olaf Doessel, Stefanie Speidel</td>
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<td><strong>128-382</strong> CEPM: Web-based Education &amp; Research Platform for Cardiac Electromechanics</td>
<td>14:30-16:30</td>
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<td>Febrian Setianto*, Ki Moo Lim</td>
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<td><strong>129-94</strong> A System for Electrocardiographic Studies in the Community</td>
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<td>Rene Ivan Gonzalez-Fernandez*, Jorge Aquilera-Perez, Gisela Montes de Oca-Colina, Marisabel Lopez-Fernandez</td>
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<td><strong>130-68</strong> An Optimized Drug Similarity Framework for Side-effect Prediction</td>
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<td>Yi Zheng*, Shameek Ghosh, Jinyan Li</td>
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<td><strong>131-422</strong> Characterization of Screen-printed Textile Electrodes Based on Conductive Polymer for ECG Acquisition</td>
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<td>Andrea Achilli*, Danilo Pani, Annalisa Bonfiglio</td>
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<td><strong>132-461</strong> A Modeling Approach for Characterizing Dry Electrodes in Wearable Long-term Cardiac Rhythm Monitoring</td>
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<td>Antonio BOSNJAK, Pedro Linares, James McLaughlin, Omar Escalona*</td>
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<td><strong>133-71</strong> Biomedical Signal Quality Assessment via Learning to Rank with an Application to Mechanical Heart Signals</td>
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<td>Olli Lahdenoja, Mojtaba Jafari Tadi*, Matti Kaisti, Timo Knuutila, Mikko Pänkäälä, Tero Koivisto</td>
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<td><strong>134-90</strong> A Database of Electrocardiogram Signals Acquired in Different Magnetic Resonance Imaging Scanners</td>
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<td>Johannes Krug*, Marcus Schmidt, Georg Rose, Michael Friebe</td>
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<td><strong>135-142</strong> Comparison of Compression Solutions for Impedance and Field Potential Signals of Cardiomyocytes</td>
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<td>Pauline Guyot*, Levy Batista, El-Hadi Djermoune, Jean-Marie Moureaux, Leo Doerr, Matthias Beckler, Thierry Bastogne</td>
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Study of Similarity Measures for Case-Based Reasoning in Transcatheter Aortic Valve Implantation
Hélène Feuillâtre*, Vincent Auffret, Miguel Castro, Hervé Le Breton, Mireille Garreau, Pascal Haigron

Time-varying Acoustic Emission Characterization for Guidewire Coronary Artery Perforation Identification
Alfredo Illanes*, Anna Schaufler, Iván Maldonado Zambrano, Axel Boese, Michael Friebe

Parsing HL7 aECG Files and Segmenting Leads for Interactive Progressive-based Interpretation of the 12-Lead Electrocardiogram
Andrew Cairns*, Raymond Bond, Dewar Finlay, Daniel Guldenring, Aaron Peace, Fabio Badilini, Guido Libretti

Respiratory Frequency Estimation from Accelerometric Signals Acquired by Mobile Phone in a Controlled Breathing Protocol
Federica Landreani*, Alba Martin, Claudia Casellato, Esteban Pavan, Carlo Frigo, Pierre-François Migeotte, Andrea Faini, Gianfranco Parati, Enrico Caiani

Cardiac-gated Slit Lamp Videography as a Novel Approach to Assessing a Microcirculatory Network
Paul F. Brennan*, Dewar Finlay, James McLaughlin, Johnny Moore, Andrew Nesbit, Mark S Spence, Emanuele Trucco, Ruixuan Wang, Tara Moore

Photoplethysmography-based Noninvasive and Continuous Blood Pressure Estimation by Artificial Neural Network
Tsai- weng Shih*, Hung-Wen Chiu

A Practical Noise Stress Test to Assess Performance of Automated Photo-plethysmogram Analysis
Reza Firoozabadi*, Saeed Babaeizadeh

Correlations of First and Second Heart Sounds with Age, Sex, and BMI
Bjarke Skogstad Larsen*, Simon Winther, Morten Bøttcher, Johannes Struijk, Samuel Emil Schmidt
Imaging Photoplethysmography: a Real-time Signal Quality Index
Sibylle Fallet*, Yann Schoenenberger, Lionel Martin, Fabian Braun, Virginie Moser, Jean-Marc Vesin

How e-Health Reduces Medical Expenditures of Chronic Diseases: Cases of Heart Failure, Hypertension, and Diabetes
Masatsugu Tsuji*
**Poster Session: Modeling Therapy**

**146-283  12:30-14:30**
Study of the Behavior of Different Guidewire Shapes in a Patient-Specific Numerical Model for Transcatheter Aortic Valve Implantation
Phuoc VY*, Vincent AUFFRET, Miguel CASTRO, Pierre BADEL, Michel ROCHELLE, Pascal HAIGRON, Stéphane AVRIL, Hervé LE BRETON

**147-400  14:30-16:30**
Computer Modeling of Irrigated-tip Electrodes During RF Cardiac Ablation: Comparative Analysis between Including and Excluding the Problem of Fluid Dynamics
Ana González-Suárez*, Juan J. Pérez, Enrique Berjano

**148-273  16:30-18:30**
Dual Extruder 3D-Bioprinter for Computer Designed Cardiac Structures
Ana María Sanchez de la Nava*, Alejandro Liberos, Ismael Hernández-Romero, María Eugenia Fernández-Santos, Felipe Atienza, Andreu M. Climent, Francisco Fernández-Avilés
Poster Session: Heart Rate Variability in Applications

**149-470**

Heart Rate Dynamics with the Applications into a Quantitative Evaluation of Improvements on Cardiac Stress Endurance after High Intensity Interval Training in Healthy Men

Szi-Wen Chen*, Jiunn-Woei Liaw, Burt Chang

**150-302**

Nonlinear Heart Rate Variability Measures after Glucose Stimuli, Test on Metabolic Syndrome Subject

Gilberto Perpiñan, Erika Severeyn, Sara Wong*, Miguel Altuve

**151-339**

Analysis of Heart Rate Variability Indices after Selective Acute Atrial Ischemia in Humans

Pedro Gomis*, Jesús Álvarez-García, Pere Caminal, Juan Cinca

**152-161**

The Effect of Haloperidol Administration on Heart Rate Variability in Isolated Heart of Schizophrenia-like and Control Rats

Oto Janousek*, Tibor Stracina, Marina Ronzhina, Jakub Hejc, Tibor Stark, Jana Ruda, Vincenzo Micale, Jana Kolarova, Marie Novakova, Ivo Provaznik

**153-256**

Nonlinear Effects of Winter Swimming and Sauna Recreational Activities on the Heart Rate Variability

Samuli Haverinen, Ilya Potapov*, Jari Viik, Esa Räsänen

**154-183**

Analysis in Cardiac Stability over Thirty Minute Periods

Masaki Hoshiyama*, Alan Murray

**155-420**

Effects of Respiratory-Gated Auricular Vagal Nerve Stimulation (RAVANS) on Nonlinear Heartbeat Dynamics of Hypertensive Patients

Ronald Garcia, Roberta Sclocco, Aileen Gabriel, Gaetano Valenza, Vitaly Napadow, Riccardo Barbieri*

**156-409**

A Universal Method to Control Over-time Alterations of Respiratory Sinus Arrhythmia in Short and Long Signals

Iga Grzegorczyk*, Jan Gierałtowski, Paweł Krzesiński, Jan Żebrowski
157-221 4:30-6:30 The Phenomenon of Synchronization between Cardiac, Respiratory and Locomotor Rhythms Judyta Salamon*, Teodor Buchner

158-368 6:30-8:30 Influence of Snack Intake on Cardiac Autonomic Nervous System in Patients with Type 2 Diabetes Saman Parvaneh*, Amir Abdolahi, Mehrnoosh Arafati, Faezeh Naderi

159-398 8:30-10:30 Diagnosis of Sleep Apnea by Evaluating Points Distribution in Poincare Plot of RR Intervals Shahab Rezaei*, Sadaf Moharreri
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<td><strong>160-246</strong></td>
<td>Atrial Fibrillation Classification Using Signal Quality Index and Convolutional Neural Networks</td>
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<td>12:30-14:30</td>
<td>Saman Parvaneh*, Jonathan Rubin, Rahman Asif, Bryan Conroy, Saeed Babaeizadeh</td>
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<td><strong>161-460</strong></td>
<td>Cardiac Arrhythmia Detection from ECG Combining Convolutional and Long Short-Term Memory Networks</td>
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<td>Philip Warrick*, Masun Nabhan Homsi</td>
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<td><strong>162-294</strong></td>
<td>Combining Multi-source Features and Support Vector Machine for Heart Rhythm Classification</td>
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<td>Chengyu Liu*, Qiao Li, Pradyumna B Suresha, Gari Clifford</td>
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<td><strong>163-226</strong></td>
<td>Atrial Fibrillation Detection Using Convolutional Neural Networks and Dictionaries</td>
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<td>18:30-20:30</td>
<td>Sandeep Chandra Bollepalli*, S Sastry Challa, Soumya Jana</td>
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<td><strong>164-301</strong></td>
<td>Dealing with Noisy ECG in the Detection of Atrial Fibrillation</td>
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<td>20:30-22:30</td>
<td>Octavian Lucian Hasna*, Rodica Potolea</td>
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<td><strong>165-56</strong></td>
<td>Rhythm and Quality Classification from Short ECGs Recorded using a Mobile Device</td>
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<td>22:30-0:30</td>
<td>Joachim A. Behar*, Aviv Rosenberg, Yael Yaniv, Julien Oster</td>
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<td><strong>166-54</strong></td>
<td>Arrhythmia Classification from the Abductive Interpretation of Short Single-lead ECG Records</td>
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<td>Tomas Teijeiro*, Constantino A. Garcia, Paulo Félix</td>
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<td><strong>167-129</strong></td>
<td>End-to-end Recognition of Atrial Fibrillation in EKG with Deep Convolutional Neural Networks</td>
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<td>2:30-4:30</td>
<td>Awni Hannun*, Sudnya Diamos, Pranav Rajpurkar</td>
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<td><strong>168-163</strong></td>
<td>Fusing QRS Detection and Robust Interval Estimation with a Random Forest to Classify Atrial Fibrillation</td>
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<td>4:30-6:30</td>
<td>Christoph Hoog Antink*, Steffen Leonhardt, Marian Walter</td>
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<td><strong>169-168</strong></td>
<td>ECG Classification Based on Time and Frequency Domain Features Using Random Forrests</td>
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<td>6:30-8:30</td>
<td>Martin Kropf*, Dieter Hayn, Günter Schreier</td>
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<td>8:30-10:30</td>
<td>Detection of Atrial Fibrillation Episodes from Short Single Lead Recordings by Means of Ensemble Learning</td>
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<td>10:30-12:30</td>
<td>Spectral and Temporal Variability Analysis and Classification for Atrial Fibrillation and Other Arrhythmias, using Quadratic SVM Classifier</td>
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<td>AF Detection and ECG Classification Based on Long-Short Term Memory Neural Networks</td>
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<td>14:30-16:30</td>
<td>SVM Based ECG Classification Using Rhythm and Morphology Features, Cluster Analysis and Multilevel Noise Estimation</td>
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<td>18:30-20:30</td>
<td>AF Classification from ECG Recording Using Feature Ensemble and Sparse Coding</td>
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<td>Multi-parametric Analysis for Atrial Fibrillation Classification in the ECG</td>
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<td>Classification of Atrial Fibrillation Using Convolutional Neural Network Trained with Semi-Supervised Learning</td>
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<td>0:30-2:30</td>
<td>Short Single Lead ECG Classification of Atrial Fibrillation and Other Rhythms Using Statistical and Heuristic Measurements with a Bagging Classifier</td>
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<td>179-245</td>
<td>ENCASE: an ENsembled CAScade classifier to Detect AFFF</td>
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<td>180-158</td>
<td>Electrocardiogram Classification Using Marker Based Neural Network</td>
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<td>Cardiac Rhythm Classification from a Short Single Lead ECG Recording: PhysioNet/CinC 2017 Challenge</td>
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<td>182-102</td>
<td>Diagnosis of AF Based on Time and Frequency Features of RR Intervals by using a Hierarchical Classifier</td>
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**Poster Session: Previous Challenges**

**183-178**
12:30-14:30

Noise Resistance of Several Top-Scored Heart Beat Detectors

Marcus Vollmer*

**184-281**
14:30-16:30

A Data-Driven Feature Extraction Method for Enhanced Phonocardiogram Segmentation

Francesco Renna*, Jorge Oliveira, Miguel Coimbra

**185-330**
16:30-18:30

Nonlinear Analysis of Heart Sounds for the Detection of Cardiac Disorders Using Recurrence Quantification Analysis

Shadi Ghiasi*, Mostafa Abdollahpur, Ali Ghaffari

**186-377**
18:30-20:30

Reducing False Arrhythmia Alarms of Patient Monitoring Systems in the Intensive Care Units

ERDEM YANAR*, Yesim SERINAGAOGLU DOGRUSOZ

**187-373**
20:30-22:30

Prediction of Mortality in Intensive Care Unit of Hospitals Using Evidence Dempster-Shafer Theory

Ali Asghar Zarrabi Rad, Nader Jafarnia Dabanloo*, Keivan Maghooli
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<td>S71</td>
<td>Imaging Cardiac Motion</td>
<td>Diego Medvedofsky, Roberto Lang, Gabriel Sayer, Karima Addetia, Eric Kruse, Sirtaz Adatya, Gene Kim, Lynn Weinert, Megan Yamat, Nir Uriel, Victor Mor-Avi*</td>
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<td>14:45-15:00</td>
<td>188-19</td>
<td>3D Echocardiographic Optimization of Residual Native Myocardial Function in Patients with Left Ventricular Assist Devices</td>
<td>Diego Medvedofsky, Roberto Lang, Gabriel Sayer, Karima Addetia, Eric Kruse, Sirtaz Adatya, Gene Kim, Lynn Weinert, Megan Yamat, Nir Uriel, Victor Mor-Avi*</td>
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<tr>
<td>15:00</td>
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<td>Realistic Ground Truth Sequences for Speckle Tracking Algorithms</td>
<td>Martino Alessandrini*, Brecht Heyde, Jan D'hooge</td>
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<tr>
<td>15:00-15:15</td>
<td>189-244</td>
<td>Realistic Ground Truth Sequences for Speckle Tracking Algorithms</td>
<td>Martino Alessandrini*, Brecht Heyde, Jan D'hooge</td>
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<td>15:15</td>
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<td>Evaluation the Myocardial Motion at Scar Locations using 4D MDCT Cardiac Images</td>
<td>Weichih Hu*, Hsuan-Ming Tsao</td>
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<tr>
<td>15:15-15:30</td>
<td>190-27</td>
<td>Evaluation the Myocardial Motion at Scar Locations using 4D MDCT Cardiac Images</td>
<td>Weichih Hu*, Hsuan-Ming Tsao</td>
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<td>Comparison of Left Ventricular Curvedness Derived from CMR Imaging with the Wall Motion Score Index for Male Patients after First-time Myocardial Infarction</td>
<td>Soo Kng Teo*, Xiao Dan Zhao, Ru San Tan, Liang Zhong, Yi Su</td>
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<td>191-146</td>
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<td>Directional Analysis of 2D Cardiac Motion Slices using the Discrete Helmholtz Hodge Decomposition</td>
<td>John Sims*, Marco Gutierrez</td>
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<td>16:00</td>
<td></td>
<td>The Differential Meaning of LV and LA Strains in Aortic Valve Stenosis: a Feature Tracking MRI Study</td>
<td>Jérôme LAMY*, Gilles Soulat, Morgane Evin, Khaoula Bouazizi-Verdier, Alain Giron, Alban Redheuil, Elie Mousseaux, Nadjia Kachenoura</td>
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<td>193-279</td>
<td>The Differential Meaning of LV and LA Strains in Aortic Valve Stenosis: a Feature Tracking MRI Study</td>
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<td>S72</td>
<td><strong>Invasive Recordings and Atrial Fibrillation</strong></td>
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<td>194-32</td>
<td>Comparative Study of Methods for Atrial Fibrillation Cycle Length Estimation in Fractionated Electrograms</td>
<td>Diego I Osorio*, Raul Alcaraz, José J Rieta</td>
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<td>195-415</td>
<td>Phase Analysis of Endoatrial Electrograms for 3D Rotor Detection in Atrial Fibrillation</td>
<td>Maddalena Valinoti*, Francesca Berto, Martino Alessandrini, Roberto Mantovan, Axel Loewe, Olaf Doessel, Stefano Severi, Cristiano Corsi</td>
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<td>196-344</td>
<td>Persistent Atrial Fibrillation Hierarchical Activation: from Highest DF Sites to Wave Fractionation at the Boundaries</td>
<td>João Salinet*, Fernando Schlindwein, Peter Stafford, Tiago Almeida, Xin Li, Frederique Vanheusden, Maria de la Salud Guillel Sánchez, G. André Ng</td>
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<td>197-69</td>
<td>Spurious Rotor Detection during Atrial Fibrillation: Phase Singularities in Fact Reflect Blurred Conduction Block</td>
<td>Stef Zeemering*, Piotr Podziemski, Pawel Kuklik, Arne van Hunnik, Bart Maesen, Ulrich Schotten</td>
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<td>198-321</td>
<td>Deterministic Structures in Fractionated Atrial Electrograms During Human Persistent Atrial Fibrillation</td>
<td>Tiago Almeida*, Fernando Schlindwein, João Salinet, Xin Li, Gavin Chu, Jiu Tuan, Peter Stafford, G. André Ng, Diogo Soriano</td>
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S73 ECG/EG-Based Analysis

200-213 14:45-15:00
A Group LASSO Based Method for Automatic Physiological Rhythm Analysis
Rebeca Goya-Esteban*, Óscar Barquero-Pérez, Carlos Figuera, Arcadi Garcia-Alberola, Jose Luis Rojo-Alvarez

201-418 15:00-15:15
Effect of Extracellular Calcium Concentration on Controlling Cardiac Alternans
Shiuan-Ni Liang*, Pik-Yin Lai

202-124 15:15-15:30
Beyond HRV: Attractor Reconstruction for Early Detection of Sepsis and Changes in Contractility
Philip Aston*, Manasi Nandi, Mark Christie

203-282 15:30-15:45
Characterizing Electrocardiographic Changes During Pre-seizure Periods through Temporal and Spectral Features
Lucia Billeci, Maurizio Varanini*

204-136 15:45-16:00
A Predictive Patient Specific Model for the Human Atrium
Cesare Corrado, steven williams, Gernot Plank, Mark O’Neill, Steven Niederer*

205-31 16:00-16:15
A Fractionation-based Local Activation Wave Detector for Atrial Electrograms of Atrial Fibrillation
Diego I Osorio*, Raul Alcaraz, José J Rieta
S74 Heart Rate Variability

206-166 14:45-15:00 Impact of Nonstationarities in Short Heart Rate Variability Recordings During Obstructive Sleep Apnea
Vlasta Bari*, Luca Faes, Davide Tonon, Beatrice De Maria, Giovanni Ranuzzi, Gianluca Rossato, Alberto Porta

207-288 15:00-15:15 Time-frequency Analysis of the Autonomic Response to Head-up Tilt Testing in Brugada Syndrome
Mireia Calvo*, Virginie Le Rolle, Daniel Romero, Nathalie Béhar, Pedro Gomis, Philippe Mabo, Alfredo Hernández

208-286 15:15-15:30 Robust Pulse Rate Variability Analysis from Reflection and Transmission Photoplethysmographic Signals
Elena Peralta*, Jesus Lazaro, Eduardo Gil, Raquel Bailón, Vaidotas Marozas

209-225 15:30-15:45 Comparison of Heart Rate Variability Assessment During Exercise from Polar RS800 and ECG
David Hernando*, Nuria Garatachea, Jose Antonio Casajús, Raquel Bailón

210-155 15:45-16:00 Effects of Pharmacological Compounds on Fractal Beat Rate Variability of Human Induced Pluripotent Stem Cell-Derived Cardiomyocytes
Jiyeong Kim*, Jukka Kuusela, Katriina Aalto-Setälä, Esa Räsänen

211-214 16:00-16:15 Analysis of Heart Rate Variability Influence on Heart Rate Turbulence Using Boosted Regression Trees in Heart Failure Patients
Óscar Barquero-Pérez*, Sandra Cantero, Rebeca Goya-Esteban, Carlos Figuera, Arcadi García-Alberoia, Jose Luis Rojo-Alvarez
S75 Arrhythmias & Signal Processing

212-269 14:45-15:00
Evaluating the Risks of Arrhythmia through Big Data: Automatic Processing and Neural Networks to Classify Epicardial Electrograms
Carlos Ledezma*, Benjamin Kappler, Veronique Meijborg, Bas Boukens, Marco Stijnen, PJ Tan, Vanessa Diaz-Zuccarini

213-84 15:00-15:15
Atrial Fibrillation Detection using Stationary Wavelet Transform and Deep Learning
Yong Xia*, Naren Wulan, Kuanquan Wang, Henggui Zhang

214-260 15:15-15:30
Morphology Based Detection of Premature Ventricular Contractions
Rohit Hadia*, Daniel Guldenring, Dewar Finlay, Alan Kennedy, Ghalib Janjua, Raymond Bond, James McLaughlin

215-82 15:30-15:45
Computational Evaluation of Radiofrequency Catheter Ablation Settings for Variable Atrial Tissue Depth and Blood Flow Conditions
Desmond Dillon-Murphy, David Nordsletten, Navjeevan Soor, Henry Chubb, Mark O'Neill, Adelaide de Vecchi, Oleg Aslanidi*

216-185 15:45-16:00
Arrhythmia Classification in Long-Term Data Using Relative RR Intervals
Marcus Vollmer*

217-182 16:00-16:15
A 4 Lead Real Time Arrhythmia Analysis Algorithm
Jianwei Su, Jian Dai, Zehong Guan, Zehui SUN, Wenyu Ye, Cadathur Rajagopalan*
Cardiovascular Mechanics

16:30 - 16:45
The Influence of Right Ventricular Afterload in Cardiac Resynchronization Therapy: a CircAdapt Study
Clemens Zeile*, Alexander Schmeisser, Thomas Rauwolf, Tobias Weber, Sebastian Sager

16:45 - 17:00
Patient-specific Modeling of Left Ventricular Electromechanics in Aortic Valve Disease Patients
Matthias Gsell*, Gernot Plank

17:00 - 17:15
Activation Dispersion: a New Method to Visualize and Quantify Ventricular Dyssynchrony
Jacob Melgaard*, Johannes Struijk, Jørgen K Kanters, Peter L Sørensen, Claus Graff

17:15 - 17:30
Novel Non-invasive Pressure-volume Loop Measurement for Local Pulse-wave Velocity Estimation
Ghalib Muhammad Waqas Janjua*, Dewar Finlay, Daniel Guldenring, Rohit Hadia, James McLaughlin

17:30 - 17:45
Non-invasive Technique for Determining Local PWV in the Human Ascending Aorta
Madalina Negoita*, Alun D Hughes, Kim H Parker, Ashraf W Khir
Tuesday, September 26, 2017

**Repolarization**

**223-85**

16:30-16:45

T-Wave Alternans Identification in Direct Fetal Electrocardiography

Ilaria Marcantoni, Marica Vagni, Angela Agostinelli, Agnese Sbrollini, Micaela Morettini, Luca Burattini, Francesco Di Nardo, Sandro Fioretti, Laura Burattini*

**224-241**

16:45-17:00

Theoretical Assessment of a Repolarization Time Marker Based on the Intracardiac Bipolar Electrogram

Michele Orini*, Stefan van Duijvenboden, Neil Srinivasan, Malcolm Finlay, Peter Taggart, Pier Lambiase

**225-9**

17:00-17:15

T-wave Morphology Restitution Dependency with Heart Rate Range and Its Association with Sudden Cardiac Death in Chronic Heart Failure

Julia Ramírez*, Michele Orini, Esther Pueyo, Pablo Laguna

**226-107**

17:15-17:30

Assessment of Spatial Heterogeneity of Ventricular Repolarization after Quinidine in Healthy Subjects

Valentina Corino*, Roberto Sassi, Luca Mainardi, Massimo Rivolta

**227-392**

17:30-17:45

The Effects of 0.67 Hz High-pass Filtering on the Spatial QRS-T Angle

Daniel Guldenring*, Dewar D Finlay, Alan Kennedy, Raymond R Bond, James McLaughlin

**228-267**

17:45-18:00

Comparison of ECG T-wave Duration and Morphology Restitution Markers for Sudden Cardiac Death Prediction in Chronic Heart Failure

Julia Ramírez*, Michele Orini, Esther Pueyo, Pablo Laguna
S83  Heart and Thorax Modelling

229-58  16:30-16:45
Statistical Variations of Heart Orientation in Healthy Adults
Freddy Odille*, Shufang Liu, Peter van Dam, Jacques Felblinger

230-202  16:45-17:00
Solving Inaccuracies in the Heart Position and Orientation for Inverse Solution by Using Electric Information

231-432  17:00-17:15
Role of Myocardial Properties and Pacing Lead Location on ECG in Personalized Paced Heart Models
Konstantin Ushenin*, Arseniy Dokuchaev, Sonya Magomedova, Oleg Sopov, Vitaly Kalinin, Olga Solovyova

232-397  17:15-17:30
Investigating the Dependency of the QRS Complex with the MRI-based Heart/torso Geometries Using Personalised Computer Models

233-112  17:30-17:45
Patient-specific Parameterization of Left-ventricular Model of Cardiac Electrophysiology using Electrocardiographic Recordings
Karli Gillette*, Anton Prassl, Jason Bayer, Edward Vigmond, Aurel Neic, Gernot Plank

234-449  17:45-18:00
A New, Low-Energy Defibrillation Strategy: Use of Multiple Electric Field Directions to Reshape Scroll Wave Filaments
Kayleigh Wheeler, Niels Otani*
Sleep Apnea

235-447  
16:30-17:00  
Apneas, Chronic Intermittent Hypoxia and Heart Rate Rhythm: Physiology and Exploration (Clinical Talk)  
Trang Nguyen Phuc Thu*, Guy Carrault, Patrick Pladys, Alfredo Hernandez, Alain Beuchée

236-224  
17:00-17:15  
Assessing Cardiovascular Comorbidities in Sleep Apnea Patients Using SpO2  
Margot Deviaene*, Carolina Varon, Dries Testelmans, Bertien Buyse, Sabine Van Huffel

237-188  
17:15-17:30  
Sleep Questionnaires in Screening for Obstructive Sleep Apnea  
Joachim A. Behar*, Niclas Palmius, Jonathan Daly, Qiao Li, Fabiola Rizzatti, Lia Bittencourt, Gari D. Clifford

238-39  
17:30-17:45  
Instantaneous Time Course of Autonomic-Cardiovascular Response to Short-Term Hypoxia in Healthy Subjects: a Time-Frequency Analysis Approach  
Salvador Carrasco-Sosa, Alejandra Guillén-Mandujano*

239-86  
17:45-18:00  
Overnight T-Wave Alternans in Sleep Apnea Patients  
Laura Burattini*, Ilaria Ciotti, Michela D' Ignazio, Alessandro Miccoli, Angela Agostinelli, Agnese Sbrollini, Micaela Morettini, Francesco Di Nardo, Sandro Fioretti
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<tr>
<td>16:30</td>
<td><strong>ECG Analysis</strong></td>
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<td><strong>240-33</strong></td>
<td>Electocardiographic P-wave Delineation Based on Adaptive Slope Gaussian Detection</td>
<td>Francisco González*, Raul Alcaraz, José J Rieta</td>
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<td><strong>241-179</strong></td>
<td>AThrIA: a New Adaptive Threshold Identification Algorithm for Electrocardiographic P Waves</td>
<td>Agnese Sbrollini*, Sofia Mercanti, Angela Agostinelli, Micaela Morettini, Francesco Di Nardo, Sandro Fioretti, Laura Burattini</td>
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<td>16:45-17:00</td>
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<td>17:00-17:15</td>
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<td><strong>243-123</strong></td>
<td>Quantification of hERG Block from the ECG</td>
<td>Brian Chiu*, Johan de Bie, David Mortara, Cristiana Corsi, Stefano Severi</td>
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<td><strong>244-159</strong></td>
<td>ECG Artefact Detection Using the Cumulative Sum and a Simple Tree Classifier</td>
<td>Jonathan Moeyersons*, Carolina Varon, Dries Testelmans, Bertien Buyse, Sabine Van Huffel</td>
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<td>17:30-17:45</td>
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<td><strong>245-3</strong></td>
<td>Model-Based Delineation of Non-Equidistant ECG</td>
<td>Thomas Niederhauser*, Andreas Haeberlin, Barbara Jesacher, Andreas Fischer, Hildegard Tanner</td>
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<td>17:45-18:00</td>
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Spatial Distribution and Orientation of Dual Moving Dipoles in a Healthy Population Obtained from 12-Lead ECGs Using a Spherically Bounded Model
Vito Starc*, Cees A. Swenne

Detecting Ischemic Stress to the Myocardium Using Laplacian Eigenmaps and Changes to Conduction Velocity
Wilson Good*, Burak Erem, Jaume Coll-Font, Dana Brooks, Rob MacLeod

Influence of Body-Surface Geometry Accuracy on Noninvasive Reconstruction of Electrical Activation and Recovery in Electrocardiographic Imaging
Matthijs Cluitmans*, Paul Volders

How Accurately Can the Method of Fundamental Solutions Solve the Inverse Problem of Electrocardiology?
Peter Johnston*

ECG Imaging of Simulated Atrial Fibrillation: Imposing Epicardial Similarity Facilitates the Reconstruction of Transmembrane Voltages
Steffen Schuler*, Danila Potyagaylo, Olaf Doessel

Including a Priori Knowledge in the Solution of the Inverse Problem During Atrial Fibrillation
Víctor Suárez-Gutiérrez, Miguel Ángel Cámara, Óscar Barquero-Pérez*, Ismael Hernández-Romero, María de la Salud Guillem Sánchez, Andreu M. Climent, Felipe Alonso-Atienza, Carlos Figuera
Wednesday, September 27, 2017

**Cardiac Mechanics & Heart Failure**

**252-198**
8:30-8:45
The Effect of Mitochondria in Intracellular Calcium Dynamics in Cardiomyocytes: a Simulation Study
Ainhoa Asensio, Jose M Ferrero*

**253-74**
8:45-9:00
Ionic Modulation of Calcium Dynamics in Simulated Human Heart Failure
Maria Teresa Mora*, Jose M Ferrero, Beatriz Trenor

**254-270**
9:00-9:15
The Role of the Ina-Ik1 Complex on Human Ventricular Conduction Velocity
Peter Marinov*, Alfonso Bueno-Orovio, Blanca Rodriguez

**255-453**
9:15-9:30
Differential Responses to Beta-Adrenergic Stimulation in the Long QT Syndrome Type 1: Characterization and Mechanisms
David Adolfo Sampedro Puente*, Jesus Fernandez-Bes, Esther Pueyo

**256-262**
9:30-9:45
Investigation of the Presence and Mechanisms of Action Potential Alternans in Hypertrophic Cardiomyopathy
Aurore Lyon*, Ana Mincholé, Elisa Passini, Blanca Rodriguez

**257-434**
9:45-10:00
Calibration of the Passive Behavior of the Left Ventricle for Mechanical Heart Simulations
Lukas Baron*, Axel Loewe, Olaf Doessel
S93 Databases & Algorithm Development

258-209 8:30-8:45
L1 Penalized Cox Regression to Characterize Cardiovascular Events in Hypertensive Patients
Rafael García-Carretero, Óscar Barquero-Pérez*, Inmaculada Mora-Jiménez, Cristina Soguero-Ruiz, Rebeca Goya-Esteban, Antonio G. Marques, Javier Ramos

259-164 8:45-9:00
Towards Heart Sound Classification without Segmentation Using Convolutional Neural Network
Wenjie Zhang*, Jiqing Han

260-156 9:00-9:15
The Physionet QT Database: Study on the Reliability of P-wave Manual Annotations under Noisy Recordings
Francisco González*, Raul Alcaraz, José J Rieta

261-64 9:15-9:30
A Review of Basic Statistical Concepts used in Clinical Test Interpretation and Decision Support
John Wang*

262-52 9:30-9:45
Semi-Supervised One-Class Transfer Learning for Heart Rate Based Epileptic Seizure Detection
Thomas De Cooman*, Carolina Varon, Anouk Van de Vel, Berten Ceulemans, Lieven Lagae, Sabine Van Huffel

263-195 9:45-10:00
Semantic Biomarker Selection for Functional Genomics of Heart Failure Model Organisms
Ludwig Lausser*, Steffen Just, Wolfgang Rottbauer, Hans Kestler
Heart Rate Analysis

The Periodic Repolarization Dynamics Index Identifies Changes in Ventricular Repolarization Oscillations Associated with Music-Induced Emotions
Giuliano Cerruto*, Luca Mainardi, Srefan Koelsch, Michele Orini

Altered Central Cardiovascular Network Pattern in Neuropathological Disease – Application of the Three Dimensional High Resolution Joint Symbolic Dynamics
Steffen Schulz, Minia Ricoy Castro, Beatriz Giraldo, Jens Haueisen, Karl-Juergen Baer, Andreas Voss*

Inspiration and Expiration Dynamics in Acute Emotional Stress Assessment
Javier Milagro*, Eduardo Gil, Jorge Mario Garzón Rey, Jordi Aguiló, Raquel Bailón

Intrapartum Fetal-State Classification Using Long Short-Term Memory Neural Networks
Philip Warrick*, Emily Hamilton

Types of Interference Effects on the Autonomic Cardiovascular Response to the Simultaneous Performance of Active Orthostatic and Cold Face Tests
Salvador Carrasco-Sosa, Alejandra Guillén-Mandujano*, Aldo R. Mejía-Rodríguez

Removal of Respiratory Influences from Heart Rate During Emotional Stress
Carolina Varon*, Jesus Lazaro, Alberto Hernando Sanz, Alexander Caicedo, Sabine Van Huffel, Raquel Bailón
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<tr>
<td>10:15</td>
<td>ECG in Exercise and Ischemia</td>
<td>Noam Omer*, Yair Granot, Jari Viik, Shimon Abboud</td>
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<tr>
<td>10:15-10:30</td>
<td>Blinded Analysis of an Exercise ECG Database Using High Frequency QRS Analysis</td>
<td>Noam Omer*, Yair Granot, Jari Viik, Shimon Abboud</td>
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<td>10:30-10:45</td>
<td>ECG as a Tool to Estimate Potassium and Calcium Concentrations in the Extracellular Space</td>
<td>Nicolas Pilia*, Olaf Doessel, Gustavo Lenis, Axel Loewe</td>
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<td>10:45-11:00</td>
<td>The STAFF III Database: ECGs Recorded During Acutely Induced Myocardial Ischemia</td>
<td>Juan Pablo Martínez*, Olle Pahlm, Michael Ringborn, Stafford Warren, Pablo Laguna, Leif Sornmo</td>
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<tr>
<td>11:00-11:15</td>
<td>Clinical Performance of High Frequency QRS Analysis for Detecting Ischemia Using Limited Sampling Rate</td>
<td>Noam Omer*, Yair Granot, Shimon Abboud</td>
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<tr>
<td>11:15-11:30</td>
<td>QRS Fragmentation Index as a New Discriminator for Early Diagnosis of Heart Diseases</td>
<td>Francisco-Manuel Melgarjeo-Meseguer, Mariela Salar-Alcaraz, Zaida Molins-Bordallo, Francisco-Javier Gimeno-Blanes*, Estrella Everss Villalba, Jose-Antonio Flores-Yepes, Jose Luis Rojo-Alvarez, Arcadi Garcia-Alberola</td>
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SA2 Photoplethysmography & Sensor Technology

276-35 10:15-10:30
A Two Step Gaussian Modelling to Assess PPG Morphological Variability Induced by Psychological Stress
Swati Banerjee*, Raquel Bailón, Jesus Lazaro, Vaidotas Marozas, Pablo Laguna, Eduardo Gil

277-329 10:30-10:45
Detecting Episodes of Brady- and Tachycardia Using Photo-plethysmography at the Wrist in Free-living Conditions
Alberto Bonomi*, Linda M. Eerikäinen, Fons Schipper, Ronald Aarts, Helma de Morree, Lukas Dekker

278-135 10:45-11:00
Impact of Mixed Media on Transfer Functions with a Pacemaker System for Estimation of RF Heating During MRI Scans
Xiaoyi Min*, Shiloh Sison

279-229 11:00-11:15
Pulse Photoplethysmography Derived Respiration for Obstructive Sleep Apnea Detection
Jesus Lazaro*, Eduardo Gil, Margot Deviaene, Raquel Bailón, Dries Testelmans, Bertien Buyse, Carolina Varon, Sabine Van Huffel

280-197 11:15-11:30
Sleep Analysis Based on Inter-Beat-Interval Obtained from Photoplethysmogram
Shuli Eyal*, Anda Baharav

281-455 11:30-11:45
The Electrical Properties of Screen-Printed Ag/AgCl for ECG Monitoring
Alan Kennedy*, Dewar Finlay, Daniel Guldenring, Matthew Cutcliffe, Micheal Skillen, James McLaughlin
SA3  Cardiovascular Responses

282-152  10:15-10:30  Progressive Fetal Distress Estimation by Characterization of Fetal Heart Rate Decelerations Response Based on Signal Variability in Cardiotocographic Recordings.  
Patricio Fuentealba*, Alfredo Illanes, Frank Ortmeier

283-165  10:30-10:45  Stratifying the Risk of Developing Atrial Fibrillation after Coronary Artery Bypass Graft Surgery Using Heart Rate Asymmetry Indexes  
Giovanni Ranuzzi*, Vlasta Bari, Beatrice De Maria, Valeria Pistuddi, Marco Ranucci, Alberto Porta

284-454  10:45-11:00  Pulse Arrival Time Accurately Detects Pacing-Induced Mechanical Alternans  
Stefan van Duijvenboden*, Nick Child, Ben Hanson, Jaswinder Gill, Peter Taggart, Michele Orini

285-341  11:00-11:15  Influence of U-shape Accelerations of Heart Rate on Very Low Frequency Band and Heart Rate Multifractality  
Mateusz Soliński*, Jan Gierałtowski, Jan Żebrowski, Paweł Kuklik

286-141  11:15-11:30  Significant Physiological Features to Identify High Performance States  
María Dolores Pelaez Coca*, María Teresa Lozano Albalate, Montserrat Aiger, Alberto Hernando, Eduardo Gil

287-333  11:30-11:45  Autonomic Nervous System Non-stationary Response to Hyperbaric Environments  
Carlos Sánchez*, María Dolores Pelaez Coca, María Teresa Lozano Albalate, Alberto Hernando, Montserrat Aiger, Eduardo Gil
Wednesday, September 27, 2017

**SA4**

### 288-242

**10:15-10:30**

**Noninvasive Characterization of Short- and Long-Term Recurrence of Atrial Signals During Persistent Atrial Fibrillation**

Pietro Bonizzi*, Stef Zeemering, Joël Karel, Muhammad Haziq Kamarul Azman, Theo Lankveld, Ulrich Schotten, Harry Crijns, Ralf Peeters, Olivier Meste

### 289-91

**10:30-10:45**

**P-wave Analysis in Paroxysmal Atrial Fibrillation Patients before and after Pulmonary Vein Isolation**

Nuria Ortigosa*, Óscar Cano

### 290-191

**10:45-11:00**

**A Patient-Specific Methodology for Prediction of Paroxysmal Atrial Fibrillation Onset**

Elisabetta De Giovanni*, Amir Aminifar, Adrian Luca, Sasan Yazdani, Jean-Marc Vesin, David Atienza

### 291-87

**11:00-11:15**

**Preliminary Results from Clinical Validation Study of a Method for Non-Invasive Assessment of Atrioventricular Node Refractoriness During Atrial Fibrillation**

Frida Sandberg*, Valentina Corino, Leif Sornmo, Pyotr Platonov, Fredrik Holmqvist
Wednesday, September 27, 2017

**Poster Session: Cardiovascular Imaging**

**292-360**
12:00-14:00
Analysis of the Wall Motion in the Hearts Obtained with Cardiac Imaging Techniques
Alexander Kursanov*, Anton Koshelev, Timofei Epanchintsev, Andrey Sozykin

**293-148**
14:00-16:00
Characterization of Hypertrophic Cardiomyopathy Using Left Ventricular Regional Wall Thickness Derived from CMR Imaging
Soo Kng Teo*, Xiao Dan Zhao, Ru San Tan, Liang Zhong, Yi Su

**294-285**
16:00-18:00
Lumen Border Segmentation at Intravascular Ultrasound Images Using Fuzzy Compound Approach
Mehdi Eslamizadeh, Gholamreza Attarodi*, Nader Jafarnia Dabanloo, Seyed Kamaledin Setarehdan, Javid Farhadi Sedehi

**295-319**
18:00-20:00
Intravascular OCT Artifact Removal by Means of Clustering/Markov Model
Shahrzad Shariati, Arash Taki*
Impact of Interventricular Lead Distance on Cardiac Resynchronization Therapy Outcomes.
Tatiana Chumarnaya*, Maria Trifanova, Tamara Lyubimtseva, Viktoria Lebedeva, Dmitry Berdov, Maria Trukshina, Dmitry Lebedev, Olga Solovyova

Experimental Method for Registering Epicardium Potentials and Myocyte Shortening
Gustavo Shimabukuro Marchini*, Daniel Seiei Uehara Tamashiro, Ismar Newton Cestari, Idágene Aparecida Cestari

Changes in the Spatial Angle And/or Ventricular Gradient after Myocardial Infarction Imply Progression towards Heart Failure
Marjolein C. De Jongh, Sumche Man, Arie C. Maan, Enno T. Van der Velde, Cees A. Swenne*

Analysis of Hemodynamic Related Changes in High Frequency Content of QRS Complex in Working Isolated Rabbit Heart
Petra Novotna*, Jakub Hejc, Marina Ronzhina, Oto Janousek, Tibor Stracina, Veronika Olejnickova, Jana Kolova, Marie Novakova

Application of Cardiac Impedance Signal in the Reservoir-Wave Model of Circulatory System in Humans
Marek Żylinski*, Wiktor Niewiadomski, Marta Sadowiec, Marcel Młynczak, Gerard Cybulski
Wednesday, September 27, 2017

PB3  Poster Session: ECG Miscellaneous

**301-332**  12:00-14:00  Human Activity Recognition for Physical Rehabilitation Using Wearable Sensors Fusion and Artificial Neural Networks
Eliasz Kantoch*

**302-134**  14:00-16:00  Biometrics via Spatial P-QRS-T Loop Features: Effect of Different VCG Transformations
Vessela Krasteva*, Irena Jekova, Ramun Schmid

**303-171**  16:00-18:00  Automatic Registration of 3D Camera Recording to Model for Leads Localization
Samir Alioui*, Martim Kastelein, Eelco van Dam, Peter van Dam

**304-222**  18:00-20:00  An ECG Web Services Portal for Standard and Serial ECG Analysis with Enhanced 3D Graphical Capabilities
Jocelyne Fayn*, Paul Rubel

**305-208**  20:00-22:00  Novel Algorithm for Estimating ST-segment Parameters
Sergey Akulov*, Aleksandr Fedotov

**306-394**  22:00-0:00  Electrophysiological Effects on Renal Ischaemia/Reperfusion-Induced Cardiac Hypertrophy
Karine Panico*

**307-193**  0:00-2:00  Saltatory Effect in Homogenized Models on Cardiac Tissue
Pedro André Arroyo*, Rodrigo Weber dos Santos, Sergio Alonso

**308-42**  2:00-4:00  Ventricular Repolarization Variation
Di Lu*

**309-393**  4:00-6:00  Beat-to-beat T-peak-T-end Interval Duration Variability Assessed by RR-Interval Histogram Analysis in Healthy Sedentary and Athlete
Olivassé Nasario-Junior, Paulo Roberto Benchimol-Barbosa, Jurandir Nadal*
310-443 6:00-8:00 Estimation and Removal of T Wave Component in Atrial Flutter ECG Using Least Square Polynomial Estimation to Aid Non-Invasive Localization of Ectopic Source
Muhammad Haziq Kamarul Azman*, Kushsairy Kadir, Decebal Gabriel Latcu, Olivier Meste

311-67 8:00-10:00 Quantitative Measurement of Respiratory Split in the Second Heart Sound
Hong Tang*, Huaming Chen

312-390 10:00-12:00 Heart Rate Recovery in Brugada Syndrome: a Bi-exponential Approach for Assessing Parasympathetic Reactivation after Submaximal Exercise
DANIEL ROMERO*, Nathalie Behar, Philippe Mabo, Alfredo Hernandez
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<td>Poster Session: Ventricular Modeling</td>
<td>Intracellular Calcium Regulation in Canine Ventricular Myocytes: a Simulation Study</td>
<td>Estefania Renu, Jose M Ferrero*</td>
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<td>14:00-16:00</td>
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<td>Effects of Small Conductance Calcium Activated Potassium Channels in Cardiac Myocytes.</td>
<td>Angelina Peñaranda*, Blas Echebarria, Enrique Alvarez-Lacalle, Inmaculada R. Cantalapiedra</td>
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<td>16:00-18:00</td>
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<td>Dimension Reduction for the Emulation of Cardiac Electrophysiology Models for Single Cells and Tissue</td>
<td>Brodie Lawson*, Chris Drovandi, Pamela Burrage, Blanca Rodriguez, Kevin Burrage</td>
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<td>18:00-20:00</td>
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<td>Effects of Quinidine on Short QT Syndrome Variant 2 in the Human Ventricles: a Modelling Study</td>
<td>Cunjin Luo*, Kuanquan Wang, Henggui Zhang</td>
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<td>20:00-22:00</td>
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<td>Ranolazine Attenuates Stretch-induced Modifications of Electrophysiological Characteristics in HL-1 Cells</td>
<td>Irene Del-Canto*, Lidia Gomez-Cid, Ismael Hernandez-Romero, María S Guillem, Maria Eugenia Fernández-Santos, Felipe Atienza, Luis Such, Francisco Fernández-Avilés, Francisco J Chorro, Andreu M Climent</td>
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<td>22:00-0:00</td>
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<td>One-dimensional Simulation of Alternating Conduction under Hyperkalaemic Conditions</td>
<td>Jiaqi Liu*, Yuan Gao, Yinglan Gong, Ling Xia, Wenlong Xu, Mingfeng Jiang, Gangmin Ning</td>
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<td>0:00-2:00</td>
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<td>A Big Data Approach to Myocyte Membrane Analysis: Using Populations of Models to Understand the Cellular Causes of Heart Failure</td>
<td>Carlos Ledezma*, Benjamin Kappler, Veronique Meijborg, Bas Boukens, Marco Stijnen, PJ Tan, Vanessa Diaz-Zuccarini</td>
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<td>2:00-4:00</td>
<td></td>
<td>Estimation of Purkinje Myocardial Junctions from Noisy Ventricular Electrical Samples</td>
<td>Fernando Barber, Miguel Lozano, Ignacio Garcia, Rafael Sebastian*</td>
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Modelling Stochastic Calcium Waves in Cardiac Myocytes Based on the Two-Pool CICR Model
Serife Arif*, Choi-Hong Lai, Nadarajah Ramesh
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| 12:00-14:00| **322-401** Emotion Recognition Using Parabolic Phase Space Mapping of Heart Rate Variability Signal  
Shahab Rezaei*, Sadaf Moharreri |
| 14:00-16:00| **323-457** Changes of Permutation Pattern Entropy and Ordinal Pattern Entropy During Three Emotion States: Natural, Happiness and Sadness  
Yirong Xia*, Licai Yang, Hongyu Shi, Yuan Zhuang, Chengyu Liu |
| 16:00-18:00| **324-93** Respiration-Guided Analysis of Pulse and Heart Rate Variabilities for Acute Emotional Stress Assessment  
Jorge Mario Garzón Rey*, Jesus Lazaro, Javier Milagro, Eduardo Gil, Jordi Aguilo, Raquel Bailón |
| 18:00-20:00| **325-167** Instantaneous Assessment of Hedonic Olfactory Perception Using Heartbeat Nonlinear Dynamics: a Preliminary Study  
Gaetano Valenza* |
| 20:00-22:00| **326-334** Linking Changes in Heart Rate to Mood Changes in Daily Life  
Oliver Carr*, Fernando Andreotti, Kate Saunders, Amy Bilderbeck, Guy Goodwin, Maarten De Vos |
| 22:00-0:00 | **327-369** Heart Rate Asymmetry in Response to Colored Light  
Saman Parvaneh*, Nader Jafarnia Dabanloo, Shahab Rezaei, Sadaf Moharreri, Nima Toosizadeh |
| 0:00-2:00  | **328-395** New Feature Set for Better Representation of Dynamic of RR Intervals in Poincare Plot  
Sadaf Moharreri, Nader Jafarnia Dabanloo, Shahab Rezaei, Saman Parvaneh* |
| 2:00-4:00  | **329-378** Using Distances to Classify Recordings of Young and Elderly Subjects  
Stavroula Vlachothanasi, George Manis* |
PB6

**Poster Session: Blood Pressure**

**330-4**
**12:00-14:00**
Decision Tree Based Detection of Intracranial Hypertension
Federico Wadehn*, Thomas Heldt, Dario Walser, Hans-Andrea Loeliger, Marek Czosnyka, Michal Bohdanowicz

**331-370**
**14:00-16:00**
Comparison of Systolic Period Duration Using Aortic Flow or Pressure Based Methods in Anesthetized Patients
Arthur Le Gall*, Alexandre Laurin, Fabrice Vallee, Denis Chemla

**332-471**
**16:00-18:00**
Design and Implementation of a Non-invasive and Cuff-less Blood Pressure Monitoring System
Seyed Mohsen Anvari, Amir Hosein Keivanpour, Mojtaba Jafari Tadi*, Tero Koivisto, Mohammadreza Yazdchi

**333-252**
**18:00-20:00**
Magnitude-based Method to Extract the Respiratory Rate from Oscillometric Cuff Pressure Waveform
Yihan Gui*, Fei Chen, Alan Murray, Dingchang Zheng

**334-65**
**20:00-22:00**
Spatial Characterization of Hypertension Clusters using a Rural Australian Clinical Database
Rachel Whitsed*, Ana Horta, Faezeh Marzbanrad, Herbert F Jelinek

**335-194**
**22:00-0:00**
Characterization of a Carotid Distention Waveform from Audio Signals Acquired with a Stethoscope
Iván Maldonado Zambrano, Alfredo Illanes*, Axel Boese, Michael Friebe

**336-234**
**0:00-2:00**
Central Hemodynamic Variability During Sleep in Subjects with and without Atrial Fibrillation
Michał Sitarek, Gerard Cybulski*

**337-121**
**2:00-4:00**
Coupling Analysis for Systolic, Diastolic and RR Interval Time Series Using Multivariable Fuzzy Measure Entropy
Lina Zhao*, Shoushui Wei, Hong Tang, Chengyu Liu
Quantifying Alterations in the Dynamics of Blood Pressure Following Stroke Using Recurrence Quantification Analysis

Ajay Verma, Amanmeet Garg, Da Xu, Nandu Goswami, Andrew Blaber, Kouhyar Tavakolian*
PB7 Poster Session: System Analysis in Fetal and Pre-term Popul

**339-349** 12:00-14:00
Role of Individual Calf Muscles towards Blood Pressure Regulation: a Pilot Study
Ajay Verma, Da Xu, Amanmeet Garg, Malcom Tremblay, Andrew Blaber, Kouhyar Tavakolian*

**340-75** 14:00-16:00
Fetal Phonocardiogram Denoising by Wavelet Transformation: Robustness to Noise
Agnese Sbrollini*, Annachiara Strazza, Manila Caragiuli, Claudia Mozzoni, Selene Tomassini, Angela Agostinelli, Micaela Morettini, Sandro Fioretti, Francesco Di Nardo, Laura Burattini

**341-298** 16:00-18:00
Effect of Chronic Hypoxia on Autonomic Nervous System of Fetal Mice
Ahsan Khandoker*, Thuraia Al Khoori, Takahiro Minato, Takuya Ito, Yoshitaka Kimura

**342-127** 18:00-20:00
Algorithm for Risk Stratification of Preterm Infants
Venkata Naga Sai Apurupa Amperayani*, Premananda Indic, Colm Travers, Riccardo Barbieri, David Paydarfar, Namasivayam Ambalavanan

**343-361** 20:00-22:00
Quantification of Fetal ST-Segment Deviations
Angela Agostinelli*, Mariachiara Di Cosmo, Agnese Sbrollini, Luca Burattini, Micaela Morettini, Francesco Di Nardo, Sandro Fioretti, Laura Burattini

**344-343** 22:00-0:00
Analyzing Fetal and Maternal Cardiorespiratory Interactions During Labor
Faezeh Marzbanrad*, Gari Clifford

**345-77** 0:00-2:00
Confirmation of Fetal Functional Autonomic Brain Age Score Using an Extended Data Set and Additional Heart Rate Variability Parameters
Alexander Schmidt, Uwe Schneider, Dirk Hoyer*
**Poster Session: Atrial Fibrillation**

**346-240**
12:00-14:00

*Atrial Fibrillation (AF) Heart Rhythm Abnormality Diagnosis in ECG Signal Using Machine Learning Algorithms Based on Time and Frequency Domain Features*

Mustafa Codur*, Emin Argun Oral, İbrahim Yücel Özbek

**347-201**
14:00-16:00

*Classification of Atrial Fibrillation in Short-term ECG Recordings Using a Machine Learning Approach and Hybrid QRS Detection*

Joanna Rymko*, Mateusz Soliński, Anna Perka, Jacek Rosiński, Michał Łepek

**348-17**
16:00-18:00

*The Dynamics Preceding Critical Transition to Atrial Fibrillation*

Boon Leong Lan*, Yew Wai Liew

**349-103**
18:00-20:00

*Atrial Fibrillation Cycle Length During Rapid Septal Pacing in Animal Model*

Adrian Luca*, Sasan Yazdani, Jean-Marc Vesin, Nathalie Virag

**350-125**
20:00-22:00

*Spectral Analysis of the ECG to Guide Optimal Endpoint in Catheter Ablation of Atrial Fibrillation*

Raul Alcaraz, Fernando Hornero, José J Rieta*
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<tr>
<td>12:00</td>
<td><strong>Atrial Fibrillation Screening through Combined Timing Features of Short Single-Lead Electrocardiograms</strong></td>
<td>Manuel García, Juan Ródenas, Raul Alcaraz, José J Rieta*</td>
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<td>14:00</td>
<td><strong>Atrial Fibrillation Detection Using Feedforward Neural Networks and Automatically Extracted Signal Features</strong></td>
<td>Jaime Yagüe-Mayans*, Santiago Jiménez-Serrano, Elena Simarro-Mondejar, Conrado J. Calvo, Francisco Castells, José Millet Roig</td>
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<td>16:00</td>
<td><strong>Atrial Fibrillation Classification Using Decision Tree</strong></td>
<td>Minggang Shao*, Shuicai Wu, Guangyu Bin, Jiao Huang, Haipeng Qin</td>
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<td>18:00</td>
<td><strong>AF Detection Based on HRV Analysis Using Stationary Wavelet Transform and Markov Chains</strong></td>
<td>Vignesh Kalidas*, Lakshman Tamil</td>
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<td>20:00</td>
<td><strong>A Hierarchical Cardiac Rhythm Classification Methodology Based on Electrocardiogram Fiducial Points</strong></td>
<td>Dionisije Sopic*, Elisabetta De Giovanni, Amir Aminifar, David Atienza</td>
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<td>22:00</td>
<td><strong>Detection of AF and Other Rhythms Using RR Variability and ECG Spectrum Measures</strong></td>
<td>Lucia Billeci*, Franco Chiarugi, Magda Costi, David Lombardi, Maurizio Varanini</td>
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<td>0:00</td>
<td><strong>Detection of Atrial Fibrillation in a Single Lead ECG Using Fuzzy Logic Classification</strong></td>
<td>Dainius Stankevičius, Andrius Petrénas, Andrius Sološenko*, Leif Sörnmo, Vaidotas Marozas</td>
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<td>2:00</td>
<td><strong>Arrhythmia Classification via Analysis of Short Single Lead ECG: the Physionet/CinC Challenge 2017</strong></td>
<td>Irena Jekova*, Todor Stoyanov, Ivan Dotsinsky</td>
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| 4:00-6:00 | **359-357** Combining Deep Learning and Feature-Based Classification to Detect Atrial Fibrillation from a Short ECG Recording  
Matthieu DA SILVA--FILARDER*, Faezeh Marzbanrad |
| 6:00-8:00 | **360-176** Can Supervised Learning Be Used to Classify Cardiac Rhythms?  
Marcus Vollmer*, Neetika Nath, Leonard Caanitz |
| 8:00-10:00 | **361-295** Identification of AF and Other Cardiac Arrhythmias from a Single-lead ECG Using Gaussian Processes  
Maria Tziakouri*, Christina Orphanidou |
| 10:00-12:00 | **362-105** Automated Detection of Atrial Fibrillation using Fourier-Bessel expansion and Teager Energy Operator from Electrocardiogram Signals  
Shivnarayan Patidar*, Ashish Sharma, Niranjan Garg |
| 12:00-14:00 | **363-114** Atrial Fibrillation Classification from a Short Single Lead ECG Recording by using a Combination of Convolutional and Long-Short Term Memory Neural Networks  
Vykinutas Maknickas*, Algirdas Maknickas |
| 14:00-16:00 | **364-472** Feature Selection for the Classification of Atrial Fibrillation Based on Entropy Measurements  
Pedro Quintana-Morales*, Antonio G. Ravelo-García, Eduardo Hernández-Pérez, Sofía Martín-González, Juan L. Navarro-Mesa |
| 16:00-18:00 | **365-199** Detection of Atrial Fibrillation Using Tensors  
Griet Goovaerts*, Martijn Boussé, Otto Debals, Lieven De Lathauwer, Sabine Van Huffel |
| 18:00-20:00 | **366-216** AF Detection with Atrial and Ventricular-based Features Using Machine Learning  
Pedro Álvarez, José Sánchez, Andreu M. Climent, Maria de la Salud Guillem Sánchez* |
| 20:00-22:00 | **367-335** Afib and Other Arrhythmia Classification Using Beats Directed Graph Path Searching  
CHENG SHI*, Savio Monteiro |
Atrial Fibrillation Classification from a Short Single Lead ECG Recording Using Hierarchical Classifier
Daniel Giaime*, Prashnna Gyawali, Nihar Vanjara, Linwei Wang

Multimodal Convolutional Neural Networks for Atrial Fibrillation Classification
Sang-Geol Koh*

Electrocardiogram Classification -- a Human Expert Way
Heikki Väänenen*, Jarno Mäkelä

Classification of ECG Recordings with Neural Networks Based on Specific Morphological Features and Regularity of the Signal
Katarzyna Stępień*, Iga Grzegorczyk

PhysioNet/CinC Challenge: Bayesian Programming to Classification of AF from Short ECG Signal
Ruhallah Amandi*, Mohammad Farhadi, A.J Zarrin

Atrial Fibrillation Classification Based on Multilevel Atrioventricular Block Optimization
Clemens Zeile*, Florian Kehrle, Sebastian Sager

Identifying AF Using Classifier Selection and Multimodal Features Extracted from ECG
Thuy Pham, Nadi Sadr*, Asghar Tabatabaei Balaei, Rui Tang, Philip de Chazal, Alistair McEwan
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<td>SC1</td>
<td>14:15-14:30</td>
<td>AF Classification from a Short Single Lead ECG Recording: the Physionet Computing in Cardiology Challenge 2017</td>
<td>Gari Clifford*</td>
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<td>375-480</td>
<td>14:30-14:45</td>
<td>A Consensus Based Approach for Atrial Fibrillation Detection Using Heart Rate Variability, Morphology, and Signal Quality Metrics</td>
<td>Fernando Andreotti*, Oliver Carr, Adam Mahdi, Maarten De Vos</td>
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<td>377-352</td>
<td>14:45-15:00</td>
<td>Classification of Atrial Fibrillation Using Multidisciplinary Features and Gradient Boosting</td>
<td>Andrew Goodwin, Sebastian Goodfellow*, Danny Eytan, Robert Greer, Mjaye Mazwi, Peter Laussen</td>
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<td>378-175</td>
<td>15:00-15:15</td>
<td>AF Classification Based on Bagging Neural Network</td>
<td>Jiayu Chen*, Stephen Redmond, Heba Khamis, Nigel Lovell</td>
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<td>379-223</td>
<td>15:15-15:30</td>
<td>Beat by Beat: Classifying Cardiac Arrhythmias with Recurrent Neural Networks</td>
<td>Patrick Schwab*, Gaetano Claudio Scebba, Jia Zhang, Marco Delai, Walter Karlen</td>
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Special Session: Clinical Guidelines in e-Health: Where do we stand?

381-362 eHealth Standards and Interoperability in Cardiology: the Role of Clinical Guidelines in Patient Summaries
Catherine Chronaki*

382-95 Remote ECG Interpretation: Guidelines and their Implementation
Iana Simova*, Milen Predovski, Ivaylo Christov, Dimitar Simov

383-55 Guidelines for Remote Telemonitoring of Implantable Devices
Polychronis DILAVERIS*, Christos-Konstantinos Antoniou, Konstantinos Gatzoulis, Dimitrios Tousoulis

384-435 Early Supported Discharge for Stroke Patients: Where Do We Stand in Terms of Guidelines and Their Implementation
Silvina Santana*, Peter Langhorne
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<td>Noninvasive Electrocardiographic Imaging: Touching Ground in Clinical Cardiology (Clinical Talk)</td>
<td>Paul Volders*, Matthijs Cluitmans</td>
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<td>386-289</td>
<td>Overcoming Barriers to Quantification and Comparison of Electrocardiographic Imaging Methods: a Community-Based Approach</td>
<td>Jwala Dhamala*, Jaume Coll-Font, Jess Tate, Maria de la Salud Guillem Sánchez, Dana Brooks, Linwei Wang, Rob MacLeod</td>
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<td>387-97</td>
<td>Analyzing Source Sampling to Reduce Error in ECG Forward Simulations</td>
<td>Jess Tate*, Karli Gillette, Brett Burton, Wilson Good, Jaume Coll-Font, Dana Brooks, Rob MacLeod</td>
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<td>388-217</td>
<td>Endocardial Mapping Validation of Non-invasive Estimation of Atrial Fibrillatory Drivers by Electrocardiographic Imaging</td>
<td>Miguel Rodrigo, Andreu M. Climent, Ismael Hernández-Romero, Mahmood Alhusseini, Christopher AB Kowalewski, Sanjiv M Narayan, Felipe Atienza, Maria de la Salud Guillem Sánchez*</td>
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Special Session: Understanding the Mechanisms of Atrial Fibrillation

Stability of Conduction Patterns in Persistent Atrial Fibrillation
Pawel Kuklik*, Benjamin Schäffer, Ruken Ö Akbulak, Mario Jularic, Christiane Jungen, Jana Nuehrich, Christian Eickholt, Christian Meyer, Stephan Willems

The Combination of Pulmonary Vein Electrophysiology and Atrial Fibrosis Determines Driver Location
Caroline Roney*, Jason Bayer, Rémi Dubois, Marianna Meo, Hubert Cochet, Pierre Jaïs, Edward Vigmond

The Efficacy of Class III Anti-arrhythmic Drug Action in 3D Canine Atrial Model Strongly Depends on the Stage of Atrial Fibrillation
Marta Varela, Jules Hancox, Oleg Aslanidi*

A Computational Framework to Benchmark Basket Catheter Guided Ablation
Martino Alessandrini, Maddalena Valinoti, Axel Loewe, Tobias Oesterlein, Olaf Doessel, Cristiana Corsi, Stefano Severi*
The Dyssynchrony Meter - a New Tool to Measure the Ventricular Conduction Abnormalities in Heart Failure Patients (CTA Winner)
Filip Plesinger*, Pavel Jurak, Josef Halamek, Pavel Leinveber, Scott McNitt, Arthur J. Moss, Wojciech Zareba, Jean-Pilippe Couderc

Tolerance to Spikes: a Comparison of Sample and Bubble Entropy
George Manis*, Roberto Sassi

Localized Activation Delay Manifests as the Early Repolarization Pattern - a Simulation Study
Peter L Sørensen*, Jacob Melgaard, Johannes Struijk, Kasper Sørensen, Jørgen K Kanter, Claus Graff

Effects of Fibroblasts on the Electrophysiology of Cardiomyocytes from Different Regions of the Human Atrium: a Simulation Study
Gunnar Seemann*, Eike M. Wülfers