

ESGCO 2014 – FINAL PROGRAM

Monday 26th May 2014

08:00-08:30 Opening Ceremony- *Giandomenico Nollo, Alberto Porta*

08:30-09:00 Keynote Lecture 1 - Chair: *Joseph Randall Moorman*

- I1 **Plamen Ch. Ivanov: *Network Physiology: Mapping Interactions between Complex Physiological Systems***

09:00 – 10:00 Plenary Session 1

Brain and Heart Physiological Networks

Chairs: Plamen Ch. Ivanov, Daniele Marinazzo

- O1 D. Piper, B. Pester, K. Schiecke, F. Benninger, M. Feucht and H. Witte: *Tensor Decomposition of Time-variant Coherence between Heart Rate Variability and EEG Envelopes in Children with Epilepsy*
- O2 L. Faes, D. Marinazzo, F. Jurysta and G. Nollo: *Granger Causality Analysis of Sleep Brain-Heart Interactions*
- O3 M. Wibral, J. T. Lizier and V. Priesemann: *How to Measure Local Active Information Storage in Neural Systems*
- O4 V. Iacovella and U. Hasson: *Magnitude of Task-Induced Deactivation of Insula and Anterior Cingulate Cortex is Related to Inter-Individual Differences in RMSSD*

10:30 – 12:00 Parallel Sessions 1-2

Entropy and Transfer Entropy

Chairs: Alberto Porta, Niels Wessel

- O5 A. Porta, V. Bari, A. Marchi, T. Bassani, P. Castiglioni, M. di Rienzo, A. Cividjian and L. Quintin: *Comparison between Permutation and Coarse-Grained Entropy Approaches for the Assessment of Short-term Complexity of Heart Period Variability*
- O6 M. Javorka, B. Czipelova, L. Chladekova, Z. Turianikova, Z. Visnovcova, Z. Lazarova and I. Tonhajzerova: *Cardiovascular Control during Orthostatic and Mental Stress: Conditional Entropy Based Analysis*
- O7 D. Widjaja, A. Montalto, E. Vlemincx, D. Marinazzo, L. Faes and S. Van Huffel: *Information Dynamics in Cardiorespiratory Time Series during Mental Stress Testing*
- O8 A. M. Catai, A. C. De Medeiros Takahashi, N. M. Perseguini, J. C. Milan, V. Minatel, T. Bassani, V. Bari, A. Marchi, P. Rehder Santos, A. Borghi-Silva, N. Montano and A. Porta: *Short-term Complexity of Cardiovascular Oscillations during Orthostatic Change in Aging*
- O9 D. J. Cornforth, M. P. Tarvainen and H. Jelinek: *Evaluation of Normalised Renyi Entropy for Classification of Cardiac Autonomic Neuropathy*
- O10 J. F. Valencia, U. Melia, M. Vallverdú, M. Jospin, E. W. Jensen, A. Porta, P. Gambus and P. Caminal: *Prediction of Response to Noxious Stimulation during Sedation-analgesia by Refined Multiscale Entropy Analysis of EEG*

Telecardiology

Chairs: Fabio Badilini, Roberto Sassi

- O11 A. Sanzo, P. Moretti, E. Renzullo, G. Spadacini and M. Tritto: *Remote Monitoring in Cardiology: Clinical Overview*

- O12 M. De Melis: *The role of Insertable Loop Recorders: Current Perspectives and Future Possibilities*
- O13 M. Ruspi, S. Carugo, M. Slavich and D. Palin: *Healthcare and Remote Monitoring System Solution on the Cloud: Our Clinical Experience on 100 Patients*
- O14 O. Chételat, M. Rapin, O. Grossenbacher, J. A. Porchet, C. Meier, R. Schmid and R. Abächerli: *Standalone Dry Electrode-Sensors for Multilead ECG Monitoring in Mobile Patients*
- O15 A. Bizzego, M. Mina, C. Zarbo, G. Esposito and C. Furlanello: *Physiolyze: a Galaxy-based Web Service for Heart Rate Variability Analysis With Online Processing*
- O16 L. Iacoviello, A. Di Castelnuovo, L. Rago, M. Vaglio, F. Badilini, D. Assanelli, M. B. Donati and G. De Gaetano: *Computerised ECG Repository in The Moli-Sani Project*

13:00 – 14:00 Plenary Session 2

Revealing the Complexity of Cardiac Dynamics

Chairs: Riccardo Barbieri, Przemyslaw Guzik

- O17 Z. Struzik: *Is Heart Rate Variability Dynamics Poised at Criticality?*
- O18 P. Clemson, Y. Suprunenko, T. Stankovski and A. Stefanovska: *The Heart as a Chronotaxic System - Why its Rate Variability is both Complex and Simple: Theory and Analysis Methods*
- O19 G. Valenza, L. Citi, E. P. Scilingo and R. Barbieri: *Defining an Instantaneous Complexity Measure for Heartbeat Dynamics: the Inhomogeneous Point-process Entropy*
- O20 P. Guzik, J. Piskorski, J. Ellert and T. Krauze: *Asymmetry of Haemodynamic Variability in Healthy People*

14:00 – 15:15 Parallel Sessions 3-4

Complexity Analysis of Heart Rate Variability

Chairs: Zbigniew Struzik, Herbert Witte

- O21 J. Żebrowski, M. Łuniewska, E. Orłowska-Baranowska and R. Baranowski: *Scaling of Return Intervals in Heart Rate Variability and the Risk of Cardiac Death*
- O22 S. Żurek, J. Piskorski, P. Guzik, M. Kośmider, M. Lewandowski and P. Castiglioni: *Day-to-Night Variations of RR Intervals Complexity Observed in 24-h ECG Holter Recordings*
- O23 G. Valenza, M. Nardelli, G. Bertschy, A. Lanatà and E. P. Scilingo: *Complexity Modulation in Heart Rate Variability during Pathological Mental States of Bipolar Disorders*
- O24 D. Makowiec, Z. Struzik, B. Graff, W. Miklaszewski, S. Budrejko, D. Kozłowski and K. Narkiewicz: *Temporal Increment Distributions of RR-Intervals Reveal Dynamics of Cardiac Regulation in Head-up Tilt Test*
- O25 D. Makowiec, Z. Struzik, B. Graff, G. Graff, D. Wejer, A. Kaczkowska, J. Wdowczyk-Szulc and M. Zarczynska-Buchowiecka: *Network Approach to Increments of RR-Intervals as a Method for Visualization of Dynamics of Cardiac Regulation*

ECG Analysis

Chairs: Antonio Fasano, Pablo Laguna

- O26 A. Fasano and V. Villani: *ECG Baseline Wander Removal by QVR Preserving the ST Segment*
- O27 C. Giuliani, A. Agostinelli and L. Burattini: *T-Wave Offset Localization from 8 vs. 15 Lead Dominant T Wave*
- O28 P. Jurak, J. Halamek, P. Leinveber, T. Reichlova, F. Plesinger, P. Vesely, V. Vondra, P. Klimes, J. Sumbera, K. Zeman and M. Novak: *Time-Frequency Interpretation of Ultra-High-frequency QRS Components*

- O29 A. Schlemmer, H. Zwirnmann, M. Zabel, U. Parlitz and S. Luther: *Evaluation of Machine Learning Methods for the Long-Term Prediction of Cardiac Diseases*
- O30 C. Maier, A. Benz and H. Dickhaus: *Segmentation of Nocturnal Holter-ECG Recordings with respect to Different Recumbent Body Positions*

15:15 Short Oral Poster Presentation 1 - Chairs: Vlasta Bari, Michela Masè

15:45 – 17:00 Poster Session 1

17:00 – 18:30 Parallel Sessions 5-6

Cardiovascular Complexity by Fractal and Symbolic Analysis

Chairs: Paolo Castiglioni, Dirk Cysarz

- O31 T. Buchner and T. Sobiech: *Vascular Resistance at Low Frequencies May Explain the Physiological Role of Mayer Waves: a Fractal Arterial Tree Model Study*
- O32 A. Faini, G. Parati, G. Bilo, M. Di Rienzo and P. Castiglioni: *Fractal Characteristics of Blood Pressure and Heart Rate from Ambulatory Blood Pressure Monitored over 24 Hours*
- O33 P. Castiglioni, A. Faini, G. Parati and C. Lombardi: *Fractal Analysis of Cardiorespiratory Signals for Sleep Stage Classification*
- O34 C. Pantoni, R. Simões, M. Gois, V. Kunz, V. Castello-Simões, A. Borghi-Silva, A. Takahashi, A. Porta and A. Catai: *Relationship between Entropy and Symbolic Analysis Indices of Heart Rate Variability in Patients with Coronary Artery Disease with and without Diabetes Mellitus*
- O35 D. Cysarz, A. Porta, N. Montano, J. Kurths, N. Wessel, F. Edelhäuser and P. Van Leeuwen: *Heart Rate Dynamics Assessed by Different Strategies of Symbolization*
- O36 S. Guzzetti, T. Bassani, G. Citerio and A. Porta: *Symbolic Analysis of Heart Rate Variability Differentiates Anesthesiological Procedures*

Smart Devices

Chairs: Ki H. Chon, Giandomenico Nollo

- O37 I. Reljin: *Review of Some New Methods for Analyzing Vital Heart Signals*
- O38 J. Riistama, J. Muehlsteff, H. Reiter, F. Sartor and A. Sipilae: *Minimally Obtrusive Measurement Devices for Monitoring of Cardiovascular Parameters – an Overview*
- O39 B. Reyes, H. Posada-Quintero, J. Bales and K. Chon: *Development of Hydrophobic Electrocardiogram Electrodes*
- O40 A. Casson: *Performance of Wrist based Electrocardiography with Conventional ECG Analysis Algorithms*
- O41 J. Lazaro, Y. Nam, E. Gil, P. Laguna and K. Chon: *Smartphone-camera-acquired Pulse Photoplethysmographic Signal for Deriving Respiratory Rate*
- O42 M. Paskas, A. Gavrovska and N. Reljin: *Identification of Fundamental Heart Sounds from PCG using Blanket Fractal Dimension*

Tuesday 27th May 2014

08:30-09:00 Keynote Lecture 2 – EPJ Nonlinear Biomedical Physics Lecture -

Chair: Jan Žebrowski

- I2 **Michael Rosenblum: *Interaction of Cardiac and Respiratory Oscillators: Quantification with Coupling Functions and Phase Response Curves***

09:00 – 10:00 Plenary Session 3

Coupling and Synchronization

Chairs: Michael Rosenblum, Tomislav Stankovski

- O43 T. Stankovski, P. McClintock and A. Stefanovska: *Cardiorespiratory Coupling Functions, Synchronization and Ageing*
- O44 U. Parlitz and S. Luther: *Detecting Synchronization and Interrelations in Multivariate Time Series*
- O45 A. Borovik, S. Kuznetsov and O. Vinogradova: *Phase Synchronization of Arterial Pressure and Heart Rate as a Measure of Baroreflex Activity*
- O46 S. Schulz and A. Voss: *Cardiovascular and Cardiorespiratory Coupling Analysis - State of the Art and Future Perspectives*

10:30 – 12:00 Parallel Sessions 7-8

Cerebral Blood Flow Oscillations

Chairs: Ronney Panerai, David Simpson

- O47 C. Rickards and Y. C. Tzeng: *Blood Pressure and Cerebral Blood Flow Oscillations: Friend or Foe?*
- O48 R. Panerai, E. Katsogridakis and D. Simpson: *Uni- and Multi-variate Coherence Function: Utility and Misconceptions*
- O49 K. Kostoglou, C. T. Debert, M. J. Poulin and G. D. Mitsis: *Nonstationary Multivariate Modeling of Cerebral Autoregulation during Free-breathing and Hypercapnic Conditions*
- O50 L. Schiatti, G. Nollo, G. Rossato and L. Faes: *Investigating Cardiovascular and Cerebrovascular Variability in Postural Syncope by means of Extended Granger Causality*
- O51 D. Simpson, A. Birch and R. Panerai: *Does Cerebral Blood Flow Autoregulation differ between Spontaneously Increasing and Decreasing Sequences in Blood Pressure?*
- O52 D. Lapi, T. Mastantuono, M. Cesarelli, G. D'Addio, M. Romano, P. Bifulco, A. Gorbach and A. Colantuoni: *Blood Flow Oscillatory Patterns in Single Vessels of Rat Pial Microcirculation evaluated by Laser Speckle Imaging*

Heart Rate Variability as a Marker of Early Human Development

Chairs: Dirk Hoyer, Peter Van Leeuwen

- O53 H. Gonçalves, D. Ayres-De-Campos and J. Bernardes: *The Effect of Gender, Gestational Age and Behavioral States on Fetal Heart Rate Variability*
- O54 D. Cysarz, F. Edelhäuser and P. Van Leeuwen: *Binary Symbolic Dynamics of Fetal Heart Rate Reflects Individual Gestational Development*
- O55 D. Hoyer, A. Schmidt and U. Schneider: *Formation and Coordination of Fetal Behavioural Patterns*
- O56 M. G. Signorini and G. Magenes: *Reliable Nonlinear Indices for Fetal Heart Rate Variability Signal Analysis*

- O57 B. Czippelova, L. Chladekova, Z. Uhrikova, M. Zibolen, K. Javorka and M. Javorka: *Is the Time Irreversibility of Heart Rate Present even in the Newborns?*
- O58 K. Gustafson, L. May and J. Allen: *Heart Rate Variability as a Proxy for Fetal Programming: The Effect of Maternal Exercise*

13:00 – 14:00 Parallel Sessions 9-10

Cardiovascular Physiology

Chairs: John M. Karemaker, Michela Masè

- O59 P. Clemson, J. Hoag, A. Stefanovska and D. Eckberg: *Action of the Sympathetic and Parasympathetic Nervous System on Cardiovascular Dynamics Revealed by Blocking Drugs*
- O60 J. M. Karemaker: *Vagal Effects on Heart Rate: Different Between Up and Down*
- O61 M. Elstad and L. Walløe: *Heart Rate Variability and Stroke Volume Variability to detect Central Hypovolemia in Spontaneously Breathing, Young, Healthy Volunteers*
- O62 M. Smolińska, K. Malinowski, S. Zajączkowski and T. Wierzba: *Multiple Baseline Approach to Predict the Heart Rate Response to Simulated Diving in Young Adults*

Cardiorespiratory Interactions

Chairs: Giuseppe Baselli, Luciano Bernardi

- O63 L. Bernardi, M. Rosengård-Bärlund and P. Groop: *Cardio-respiratory Interactions in Diabetes*
- O64 R. Dellaca', E. Zannin, A. Di Toro, R. Pellegrino and L. Bernardi: *The Effects of Parasympathetic Activity on Bronchial Tone*
- O65 C. Varon, A. Montalto, K. Jansen, L. Lagae, D. Marinazzo, L. Faes and S. Van Huffel: *Interictal Cardiorespiratory Variability in Temporal Lobe and Absence Epilepsy in Childhood*
- O66 G. Baselli, F. Aletti, M. Ferrario: *Respiration in Cardiovascular Regulation Models: Signal or Confounding Factor? A Review*

14:00 – 15:15 Parallel Sessions 11-12

Cardiovascular Oscillations in Clinic

Chairs: Gian Domenico Pinna, Gianfranco Parati

- O67 C. Heinze, D. Sommer, U. Trutschel, S. Schirmer and M. Golz: *Discrimination Between Normal Sinus Rhythm and Congestive Heart Failure Using RR-Interval Features and Learning Vector Quantization*
- O68 A. R. Zamunér, C. Pieroni Andrade, M. Forti, A. M. Catai, P. Driusso, R. Furlan and E. Silva: *Cardiovascular Autonomic Control and its Relationship with the Quality of Life in Patients with Fibromyalgia: Preliminary Study*
- O69 L. Dalla Vecchia, A. Lucini, D. Volza, R. Sideri, K. Marinou and G. Mora: *Cardiac Neural Regulation Involvement in Patients with Amyotrophic Lateral Sclerosis*
- O70 H. Jelinek, T. Althman, D. Cornforth, K. Khalaf and A. Khandoker: *Effect of Biosignal Preprocessing and Recording Length on Clinical Decision Making for Cardiac Autonomic Neuropathy*
- O71 T. Mastantuono, D. Lapi, L. Battiloro, M. Cesarelli, G. D'Addio, L. Iuppariello and A. Colantuoni: *Microvascular Blood Flow Regulation Impairments in Hypertensive Obese People*

Multivariate Analysis of Cardiovascular Variability

Chairs: Luca Faes, Georgios Mitsis

- O72 J. Runge, M. Riedl, H. Stepan, N. Wessel and J. Kurths: *Quantifying the Causal Strength of Multivariate Cardiovascular Couplings with Momentary Information Transfer*
- O73 P. Laiou, R. G. Andrzejak and D. Kugiumtzis: *Evaluation of Causality Measures Based on Non-Uniform Embedding Schemes with Application to the Cardiovascular System*
- O74 K. Schiecke, D. Piper, S. Buerger, L. Leistritz, M. Feucht, and H. Witte: *Empirical Mode Decomposition of Cardiovascular Signals. A methodological Study*
- O75 T. Stankovski, D. Eckberg and A. Stefanovska: *The Effects of Time-varying Breathing on Human Neurophysiological and Cardiovascular Mechanisms*
- O76 K. Andersson, O. B. Suhr, L. Faes and U. Wiklund: *Directed Coherence Analysis in Patients with Severe Autonomic Dysfunction*

15:15 Short Oral Poster Presentation 2 - *Chair: Vlasta Bari, Michela Masè*

15:45 – 17:00 Poster Session 2

Wednesday 28th May 2014

08:30-09:00 Keynote Lecture 3 - Chair: Flavia Ravelli

13 Leon Glass: *Predicting the Risk of Sudden Cardiac Death*

09:00 – 10:00 Plenary Session 4

Repolarization Variability Analysis

Chairs: Leon Glass, Andreas Voss

- 077 C. Fischer, A. Seeck, R. Schroeder, M. Goernig, A. Schirdewan, H. R. Figulla, M. Baumert and A. Voss: *QT Variability Analysis for Risk Stratification in Patients with Dilated Cardiomyopathy*
- 078 V. Starc, A. S. Abughazaleh and T. T. Schlegel: *Reliability and Reproducibility of Advanced ECG Parameters in Month-to-Month and Year-to-Year Recordings in Healthy Subjects*
- 079 G. Piccirillo, F. Moscucci and G. D'Alessandro: *Temporal Dispersion of Ventricular Repolarization Phase and Autonomic Nervous System Control: Clinical and Experimental Evidences*
- 080 M. W. Rivolta, L. T. Mainardi and R. Sassi: *Quantification of Ventricular Repolarization Heterogeneity during Moxifloxacin Administration using V-Index*

10:00 – 10:15 Announcements

10:45 – 12:00 Parallel Sessions 13-14

Cardiac Arrhythmias

Chairs: Juan Pablo Martinez, Flavia Ravelli

- 081 T.K. Shajahan, V. Krinsky, S. Knyazeva and S. Luther: *Eliminating Pinned Spiral Waves in Cardiac Monolayer by Far Field Pacing*
- 082 S. Filippi, C. Cherubini, A. Gizzi, A. Loppini and F. H. Fenton: *Spatio-Temporal Correlation of Paced Cardiac Tissue*
- 083 M. Masè, A. Graffigna, S. Sinelli, S. Restivo and F. Ravelli: *Unified Framework for the Combined Assessment of Autonomic Function and Ectopic Activity Before Post-Operative Atrial Fibrillation*
- 084 A. Alcaine, Á. Arenal, P. Laguna and J. P. Martínez: *Study of Electrogram Organization and Synchronization in Paroxysmal and Persistent/Permanent Atrial Fibrillation*
- 085 G. Byrne, C. Marcotte and R. Grigoriev: *Exact Coherent Structures and Dynamics of Cardiac Tissue*

Baroreflex Analysis

Chairs: Raffaello Furlan, Nicola Toschi

- 086 G. D. Pinna, R. Maestri and M. Teresa La Rovere: *Assessment of Baroreflex Sensitivity from Spontaneous Oscillations of Blood Pressure and Heart Rate: Proven Clinical Value?*
- 087 T. Loncar-Turukalo, M. Vasic, G. Mijatovic, N. Japundzic-Zigon and D. Bajic: *Heart Rate Variability and Baroreceptor Reflex Sensitivity in Doxorubicin-induced Cardiomyopathy*
- 088 V. Bari, A. Marchi, T. Bassani, V. Pistuddi, M. Ranucci and A. Porta: *Empirical Mode Decomposition Approach to the Estimation of Cardiac Baroreflex Sensitivity in Patients undergoing Coronary Artery Bypass Graft Surgery*
- 089 F. Barbic, K. Heusser, W. Sies, J. Buehlmeier, P. Gauger, T. Bassani, J. Tank, J. Jordan, A. Diedrich, D. Robertson, F. Dipaola, S. Achenza, A. R. Zamuner, A. Porta and R. Furlan: *Changes*

in the Linear Relationship between Cardiovascular Parameters and Neural Sympathetic Discharge Variability before Orthostatic Syncope

- O90 A. M. Catai, A. C. De Medeiros Takahashi, N. M. Perseguini, J. C. Milan, V. Minatel, P. Rehder Dos Santos, T. Bassani, V. Bari, A. Borghi-Silva, N. Montano and A. Porta: *Baroreflex Response to Orthostatic Challenge: Effect of Aging*

13:00 – 14:00 Parallel Sessions 15-16

QT Measurement and Analysis Methods

Chairs: Giandomenico Nollo, Alberto Porta

- O91 S. Zaunseder, M. Schmidt, H. Malberg and M. Baumert: *Measurement of QT Variability by Two-Dimensional Warping*
- O92 G. Valenza, M. Orini, L. Citi, A. Mincholé, E. Pueyo, P. Laguna and R. Barbieri: *Assessing Instantaneous QT Variability Dynamics within a Point-Process Nonlinear Framework*
- O93 C. Cammarota, M. Curione, A. Quaresima and M. Varrenti: *Time delay between RR and RT Heart Beat Intervals in Exercise Test Data of Normal and Ischemic Subjects*
- O94 J. Halamek, P. Jurak, P. Vesely, V. Vondra and P. Leinveber: *Bayes Analysis of Nonlinearity between Heart Rate and QT*

Cardiovascular Physiology in Microgravity

Chairs: Enrico G. Caiani, Marco Di Rienzo

- O95 E. G. Caiani, A. Pellegrini, P. Massabuau, P. Laguna, R. M. Lang and P. Vaida: *Changes in Ventricular Repolarization and Cardiac Function Induced by Head-down Bed Rest*
- O96 M. Di Rienzo, E. Vaini, B. Bruno, P. Castiglioni, P. Lombardi, G. Parati, C. Lombardi, P. Meriggi and F. Rizzo: *Wearable Seismocardiography: Towards the Beat-to-Beat Assessment of Cardiac Mechanics during Sleep in Microgravity*
- O97 A. Martín-Yebra, E. G. Caiani, V. Monasterio, A. Pellegrini, P. Laguna and J. P. Martínez: *T-Wave Alternans and Autonomic Nervous System Activity During Orthostatic Stress after 5 Days of Head-down Bed-Rest*
- O98 A. Marchi, T. Bassani, V. Bari, K. Heusser, J. Tank, J. Jordan, F. Barbic, R. Furlan and A. Porta: *Assessment of Sympathetic Baroreflex Control during Orthostatic Challenge before and after Prolonged Head-down Bed Rest*

POSTER SESSION 1

- P1 A. Takahashi, L. Bonjorni, M. Buto, V. Vassimon-Barroso, V. Minatel, S. Rocha, F. Ribeiro, N. Montano, A. Porta and A. Catai: *Short-Term Complexity of Cardiovascular Oscillations during Orthostatic Challenge in Frailty Syndrome*
- P2 D. Wejer, A. Kaczkowska, D. Makowiec, Z. Struzik, B. Graff, G. Graff, S. Budrejko, D. Kozłowski and K. Narkiewicz: *Temporal Changes in Complexity of Cardiovascular Regulation During the Head-up Tilt Test by Entropic Measures of Fluctuations of Heart Period Intervals and Systolic Blood Pressure*
- P3 A. Montalto, L. Faes and D. Marinazzo: *MuTE: a New Matlab Toolbox for Estimating the Multivariate Transfer Entropy in Physiological Variability Series*
- P4 M. Nardelli, G. Valenza, I. Cristea, C. Gentili, C. Cotet, D. David, A. Lanatà and E. P. Scilingo: *Characterization of Behavioral Activation in Non-Pathological Subjects through Heart Rate Variability Monovariate and Multivariate Multiscale Entropy Analysis*
- P5 L. Carozzi, M. Carrara, T. J. Moss, S. Cerutti, M. Ferrario, D. Lake and J. R. Moorman: *Heart rate Dynamics Predict 2-Year Mortality Risk in Ambulatory Patients undergoing Holter Monitoring*
- P6 M. Carrara, L. Carozzi, S. Cerutti, M. Ferrario, D. E. Lake and J. R. Moorman: *Classification of Cardiac Rhythm based on Heart Rate Dynamics*
- P7 E. Fornasa, A. Accardo, R. Zotti, A. De Felice and G. D'Addio: *Relationships between Linear and Nonlinear Indexes of Heart Rate Variability in Obstructive Sleep Apnea Syndrome*
- P8 P. Castiglioni, A. Faini, C. Lombardi, M. Di Rienzo, A. Ciullo, A. De Felice and G. D'Addio: *Characterization of Apnea Events in Sleep Breathing Disorder by Local Assessment of the Fractal Dimension of Heart Rate*
- P9 D. Cysarz, F. Edelhäuser and P. Van Leeuwen: *Heart Rate Complexities Assessed by Short Binary Symbolic Patterns*
- P10 Md Aktaruzzaman, V. Corino, L. T. Mainardi, S. R. Ulimoen, P. G. Platonov, A. Tveit, S. Enger and R. Sassi: *HRV Regularity during Persistent Atrial Fibrillation: a Parametric Assessment using Sample Entropy*
- P11 G. D'Addio, M. Romano, L. Maresca, P. Bifulco, E. Fornasa, F. Giallauria, M. Cesarelli and C. Vigorito: *Fractal Behavior of Heart Rate Variability during ECG Stress Test*
- P12 H. Abubaker, A. H. Khandoker, H. Alsafar, K. Khalaf and H. F. Jelinek: *Effect of Downsampling on Diabetes Diagnosis using Poincaré-based HRV Analysis of Short ECG Recordings*
- P13 B. Graff, G. Graff, A. Kaczkowska, D. Makowiec, S. Budrejko, D. Kozłowski and K. Narkiewicz: *Ordinal Pattern Statistics for RR Intervals During Head-Up Tilt Test in Patients with the History of Vasovagal Syncope*

POSTER SESSION 2

- P14 C. Heinze, D. Sommer, U. Trutschel and M. Golz: *Relevance Determination of RR-Interval Features for the Discrimination Between Normal Sinus Rhythm and Congestive Heart Failure*
- P15 U. Trutschel, C. Heinze, D. Sommer and M. Golz: *The Influence of Feature Fusion for the Discrimination Results between two Heart Conditions*
- P16 P. Van Leeuwen, L. Werner, D. Cysarz, W. Hatzmann and D. H.W. Grönemeyer: *Evaluation of Fetal Heart Rate Variability based on Automatically Determined R-times in a Fetal ECG Monitor*
- P17 F. Plesinger, M. Matejkova, J. Halamek, P. Jurak, I. Viscor and V. Vondra: *Influence of Tilt Load on Pulse Wave Velocity in the Lower Limbs*
- P18 S. Pelloni, M. Masè, A. Cristoforetti and F. Ravelli: *Modeling Fibrosis Distribution for the Study of Wave Propagation Patterns during Atrial Fibrillation*
- P19 A. Mueller, H. Bonnemeier, H. Malberg, J. Kurths and N. Wessel: *Age-dependent Changes in the Manifestations of Gender-Related Differences in the Cardiovascular Regulation*
- P20 D. Simpson and A. Beda: *Individual Difference in Baroreceptor Sensitivity between Increasing and Decreasing Blood Pressure Sequences*
- P21 C. Pieroni Andrade, A. R. Zamunér, M. Forti, A. M. Catai, P. Driusso and E. Silva: *Association between Baroreflex Sensitivity and Pressure Pain Threshold in Women with Fibromyalgia*
- P22 O. Tarasova, N. Tarasova, E. Lukoshkova, S. Mochalov, D. Gaynullina and A. Borovik: *Reduction of Baroreflex Blood Pressure Oscillations in 12-Month-Old SHR: Central and Peripheral Mechanisms*
- P23 R. Maestri and G. D. Pinna: *A Computer Application for the Investigation of Cardiac Autonomic Effects of Sleep-disordered Breathing in Heart Failure Patients*
- P24 J. Fontanet, E. Gabarrón, M. Jospin, M. Vallverdú, P. L. Gambus and E. W. Jensen: *Comparison of the qNOX and ANI Indices of Nociception during Propofol and Remifentanil Anaesthesia*
- P25 M. Ferrari, R. Martini, A. Bagno: *Spectral Analysis of the Laser Doppler Perfusion Signal in Patients with Critical Limb Ischemia after Limb Revascularization*
- P26 T. Mastantuono, E. Muscariello, T. Novellino, D. Lapi, M. Cesarelli, G. D'Addio, L. Iuppariello and A. Colantuoni: *Changes in Frequency Components of Blood Flow Oscillations in Hyperglycemic Obese People*
- P27 D. Lapi, M. Varanini, F. Gheser, S. Ghione, C. Del Seppia, R. Scuri and A. Colantuoni: *Effects of Mandibular Extension on Low-Frequency Components in Rat Pial Arteriolar Rhythmic Diameter Change*