

COMPUTING IN CARDIOLOGY

September 24-27, 2017

Rennes, France



Table of Contents

Sponsors	4
Welcome to Maastricht in 2018!	5
Board of Directors	6
Letter from the President	7
Welcome from our CinC 2017 Hosts	9
Conference Information	11
General Map	11
Map of the Campus de Beaulieu	12
Map of the ESIR School	14
Reaching Rennes and Transportation	15
Sunday Symposium	15
Conference site	16
Monday Social Program	17
Tuesday Evening Reception	18
Wednesday Evening Reception	18
Hotel & Practical Information	18
Accommodation	18
Climate	18
Opening hours	18
Money/currency	18
Emergency phone numbers	19
Calling	19
Electric standards	19
A few tips for a pleasant, trouble-free stay	19
Useful links	19
Places to visit around Rennes and in Brittany	19
General Information	20
Internet Access	20
Meals	20
Accompanying Persons (Guests)	21
For Authors and Speakers	22
Oral Presentations	22
Poster Presentations	22
Rosanna Degani Young Investigator Award	23
Clinical Needs Translational (CTA) Award	23
PhysioNet/Computing in Cardiology Challenge 2017	23
Manuscripts	23
Program Overview	25
Program Details	28
Author Index	100

Sponsors

Computing in Cardiology 2017 is supported by several companies and academic partnerships. The Local Organizing Committee thanks their partners:





Welcome to Maastricht in 2018!

On behalf of the local organizing committee, we warmly invite you to attend the 2018 Computing in Cardiology Conference to be held September 23-26, 2018 in Maastricht, The Netherlands.

Situated in the southernmost part of the Netherlands, Maastricht is located in the heart of Europe and the Euregion Meuse –Rhine. The city is only a short distance from both the Belgian and the German border, and cities such as Liege, Aachen, Düsseldorf, Frankfurt, and Brussels are very near. Maastricht is easily accessible by plane, train, and car.

Maastricht is the oldest city in the Netherlands, but its university is the youngest and most international one, with 16 000 students from more than 100 different countries. Being the gastronomic capital of the Netherlands, the city also offers everything from Michelin-starred establishments to traditional, small local restaurants and pubs offering hospitality and quality food for every budget.

The organizing committee, representing the Departments of Cardiology, Biomedical Engineering, Physiology, and Knowledge Engineering is currently preparing an active scientific and social program in and around Maastricht for Computing in Cardiology 2018. The focus of the Sunday Symposium will be twofold: advanced arrhythmia management and hands-on experience using a number of advanced computer models and software tools in cardiology. After a short introduction, 250 computers are waiting for the participants to discover the possibilities of various models to simulate, for example, cardiac contraction or electrical activation across various scales from ion-channel to whole heart. Activist and passivist programs will be offered during the social event on Monday afternoon, ranging from very lazy to breath-taking.

The Sunday symposium will take place at Maastricht University and the conference at the MECC Conference Centre, both within walking distance from your hotel or easily reachable using the public transportation, free of charge for CinC participants.

The organizing committee is looking forward to meeting you in Maastricht in 2018!

Willem Dassen and Tammo Delhaas, Co-chairs, CinC 2018

Board of Directors

President

Pablo Laguna, PhD
University of Zaragoza
Zaragoza, Spain

Secretary

Leif Sörnmo, DSc
Lund University
Lund, Sweden

Treasurer

Victor Mor-Avi, PhD, FASE
University of Chicago
Chicago, IL, USA

Cristiana Corsi, PhD
University of Bologna
Bologna, Italy

Olaf Doessel, PhD
Karlsruhe Institute of Technology
Karlsruhe, Germany

Dewar Finlay, PhD
University of Ulster
Belfast, UK

Paul Kligfield, MD, FACC
Weill Cornell Medical School
New York, NY, USA

Rob MacLeod, PhD
SCI Institute, University of Utah
Salt Lake City, Utah, USA

Ex-Officio

Chair of the ESC Working Group on e-Cardiology:

Enrico G Caiani, PhD
Politecnico di Milano
Milan, Italy

Past President

Peter Macfarlane, DSc
University of Glasgow, UK

The following positions are non-Elected:

Editor, Proceedings

Alan Murray, PhD
Freeman Hospital
Newcastle upon Tyne, UK

Executive Director, CinC Physionet Challenge

George Moody, MIT

Director, 2017 CinC Physionet Challenge

Gari Clifford, DPhil
Georgia Institute of Technology,
Atlanta, Georgia, USA
Emory University, Atlanta, Georgia,
USA.

Director of Information Services

Sheryl Prucka, MSEE
Prucka Engineering, Inc
Park City, UT, USA

Letter from the President

Dear Participant,

Welcome to the 44th Computing in Cardiology conference. This is the third time, after Lyon 2005 and Nice 2015, that the Computing in Cardiology community has met in France, a country with a long tradition of engineering applied to cardiology. The Board of Directors was very happy when Guy Carrault and colleagues from the University of Rennes volunteered to host this year's meeting. The research group in Rennes has large experience from collaborative projects involving academia, industry, and clinicians. They have prepared an excellent meeting and social program, and the record number of abstracts submitted demonstrates the increasing interest and huge impact of engineering in cardiology.

To ensure that the conference remains at the frontier of research, the following three special sessions are included in the program:

- ***Electrocardiographic Imaging: Challenges in Evaluation and Validation***
- ***Understanding the Basic Mechanisms of Atrial Fibrillation using Novel Computational Approaches***
- ***Clinical Guidelines in the practice eHealth: Where do we stand?***

The program also includes several clinical talks whose aim is to better connect clinical and engineering aspects of research. The titles are:

- ***Noninvasive Electrocardiographic Imaging: Touching Ground in Clinical Cardiology***, by Paul Volders
- ***Cardiac Computing and Prevention of Sudden Cardiac Death in Athletes***, by Frederic Schnell
- ***Prediction of Response to Cardiac Resynchronization Therapy: the Value of Cardiac Work When Compared to Other Dyssynchrony Parameters***, by Erwan Donal
- ***Targeted Cardio-respiratory Rhythms Monitoring Used as Decision Support System in Neonatology***, by Patrick Pladys
- ***Noninvasive Electrocardiographic Imaging for Individuals at Risk for Idiopathic Ventricular Fibrillation***, by Paul Volders
- ***Apneas, Chronic Intermittent Hypoxia and Heart Rate Rhythm: Physiology and Exploration***, by Alain Beuchée.

The Mortara Fellowships represent an extraordinary means for “reducing the distance” for young researchers with limited means so that they can present their work at CinC. The Rosanna Degani YIA Competition aims at promoting high standards in research quality by highlighting the best research projects conducted by young investigators. The PhysioNet-CinC Challenge represents a major effort to direct research towards clinically relevant topics, in which annotated data is provided to the research community. The Clinical Needs Translational (CTA) Award, given in collaboration with the ESC, aims at promoting developments which are tightly joined, and relevant, to the clinical needs. All these initiatives, being features of today's CinC, benefit from feedback from the scientific community. Therefore, I encourage you to provide the Board of Directors with feedback on these initiatives as well as any other aspects. It is the Board's commitment to do its best for guiding the progress of our CinC organization in the coming years.

At the end of this meeting, Peter Macfarlane, Leif Sörnmo, George Moody, Victor Mor-Avi, Paul Kligfield, and Alan Murray leave the Board. I would like to thank them for nine

or more years of hard work serving Computing in Cardiology. – Peter, first as a member, then as president, and most recently as past president, has guided the transformation of CinC for about a decade. Leif, as secretary, has established a well-organized repository of all the board debates, decisions, and documentation related to CinC. Victor, as Treasurer of CinC, has skillfully managed the finances with the introduction of the endowment fund which has allowed CinC to move closer to the objective of financing our awards from the interest of that fund. Paul, as our clinical expert, has driven the initiatives to close the gap between engineering and cardiology, while also contributing substantially to the financial vision of CinC. Finally, two non-elected Directors who will not be returning to the Board, George who organized the very successful Physionet Challenge for a decade, and Alan, editor of the Proceedings for almost three decades, guaranteeing that the format of the proceedings has met the highest standards. The CinC Proceedings are today recognized as top quality in the scientific community. To all these individuals, we offer our sincere thanks. Please remember that Board work is voluntary, at times with high workloads, making this service to CinC particularly worthy of acknowledgment.

This year also marks my final year as President of the Board. The last three-year term has at times been challenging, consolidating changes introduced just before my term started. New initiatives have been taken, including the Clinical Translational Award, in collaboration with the ESC e-cardiology working group, the special sessions and the clinical talks. All these initiatives reduce the gap between engineering and clinical applications. On the logistic side, we have introduced the **Conference4me** app to allow participants up-to-the minute information on the conference. In addition, we have advanced the proceedings to a fully digital publication which utilizes our own DOI for reference. An organization like CinC never reaches a steady state, but is always characterized by large dynamics. Because of this, the new Board will have to adjust to new scientific challenges and new organizational strategies. All these things cannot occur without the huge commitment of the Board members, for which I would like to thank each and every one of them. They have been a great support to me over the past three years, and I offer my successor, whoever that may be, every good wish for the continued success of CinC.

Again, it is time to remind any of you who might be considering hosting a CinC conference to contact the Secretary of the Board. Advanced planning is strongly encouraged, so please step forward. We would like to stress that all potential hosts are welcome, and we particularly encourage those from regions/countries that have not yet hosted a conference.

Finally, I hope you will have a scientifically stimulating meeting that will enable you to continue your work, raising new ideas and projects, and inspiring you to submit an abstract for presentation at next year's meeting in Maastricht, the Netherlands from 23 - 26 September 2018. Let me take this opportunity to thank Guy Carrault and the Rennes Local Organizing Committee for the work they have done in preparing Computing in Cardiology 2017. I am sure it will be a great success.

Best wishes,

Pablo Laguna

President, Computing in Cardiology

Welcome from our CinC 2017 Hosts

Dear Colleagues,

On behalf of the organizing committee, the University of Rennes, France, has the honor to host the 44th annual international conference of Computing in Cardiology from Sunday, September 24th through Wednesday, September 27th, 2017. The University of Rennes is a large University in France with over 60 000 students.

You don't come to Rennes by chance! Rennes is easily reached by TGV from Paris in 1h30. This is a lovely city with a long history. The city of Rennes, capital of Brittany, is a fashionable metropolis and emerging city in France offering something for everyone: arts, history, nightlife, shopping and science. You will be agreeably surprised by the ease of life in the city, classified as one the most appreciated French cities to live in with its trendy boutiques, creperies, and sea food restaurants. You will enjoy the old city, the cathedral Saint Pierre, Timber framed houses (place du Champ Jacquet), the sumptuous Parlement de Bretagne, the theatre, the city hall, the museum and, for the sportsmen, a ride along the canal Ille et Rance.

During the conference, you will enjoy the emerald seaside coast with the corsair city Saint-Malo, the beach in Dinard (and its English film festival just after the conference in 2017) and the majestic Mont Saint-Michel, a pure miracle, the second most visited tourist site in France.

For the scientific program, it is our pleasure to welcome you at the Ecole Supérieure d'Ingénieurs de Rennes, also called ESIR, of the University of Rennes, in the main campus of the University (Campus de Beaulieu). This venue is located near downtown (7 minutes by bus, see attached map) and it takes only a short ride to reach the historic center of the city, the museums and other places of interest.

It is the third time that France hosts a CinC conference. Only two years after Nice, and following Vancouver, you will discover Brittany, a very different country.

The Conference will begin on Sunday afternoon 24th September at 2:00 pm with a special symposium with invited talks related to the past, the actual and the future of cardiac stimulation. We would like briefly mention why this symposium is organized in Rennes. The conference is organized by the *Laboratoire Traitement du Signal et de l'Image* and the *Cardiologist Department of University Hospital* who have developed for several years a long cooperation, leading to more than 30 patents in cardiac stimulation (in a wide sense). It is our pride to mention that Rennes cardiologists proposed for the first time the principle of cardiac resynchronization to take in charge heart failure patients. The symposium will take place in a very old monastery, just located downtown, easily reachable by foot from the railway station. Six outstanding speakers will explore all the facets of cardiac stimulation. The Sunday reception will be located at the same place, in the large and beautiful reception room, in front of the small chapel of the monastery.

The scientific sessions, including oral and poster presentations, will begin on Monday morning. Note that some sessions will be followed by open discussions on various topics with the aim to strengthen the relationship between Clinicians and Engineers.

Monday afternoon, the traditional social program will be an opportunity to visit the second most visited place in France, Mont Saint-Michel. If you are activist, you will

discover Mont Saint-Michel in an unforgettable experience. If you are passivist, you will discover this marvelous city, steeped in history. This exploration will finish with a fabulous gala dinner downtown, in one of the most active parts of Rennes.

The sessions will continue on Tuesday, ending with a reception at the city hall offered by the city of Rennes. If you would like, a short visit of old Rennes streets or Parlement de Bretagne (before 1532, Brittany was independent of France and joined France when Anne de Bretagne married Charles VIII and then Louis XII) is also planned. The meeting will conclude on Wednesday afternoon, followed by a farewell party downtown.

The Laboratoire Traitement du Signal et de l'Image, the Cardiologist Department, INSERM and the University of Rennes have the pleasure and honor to be the host of Computing in Cardiology 2017. The Local Organizing Committee will enjoy assisting you in meeting your requests.

We hope that you will be intellectually stimulated and challenged by the CinC2017 scientific program and, at the same time, that Rennes and Brittany will delight you. We look forward to seeing you in Rennes.

A handwritten signature in black ink, appearing to read 'Guy Carrault', with a long horizontal line extending to the right.

Guy Carrault

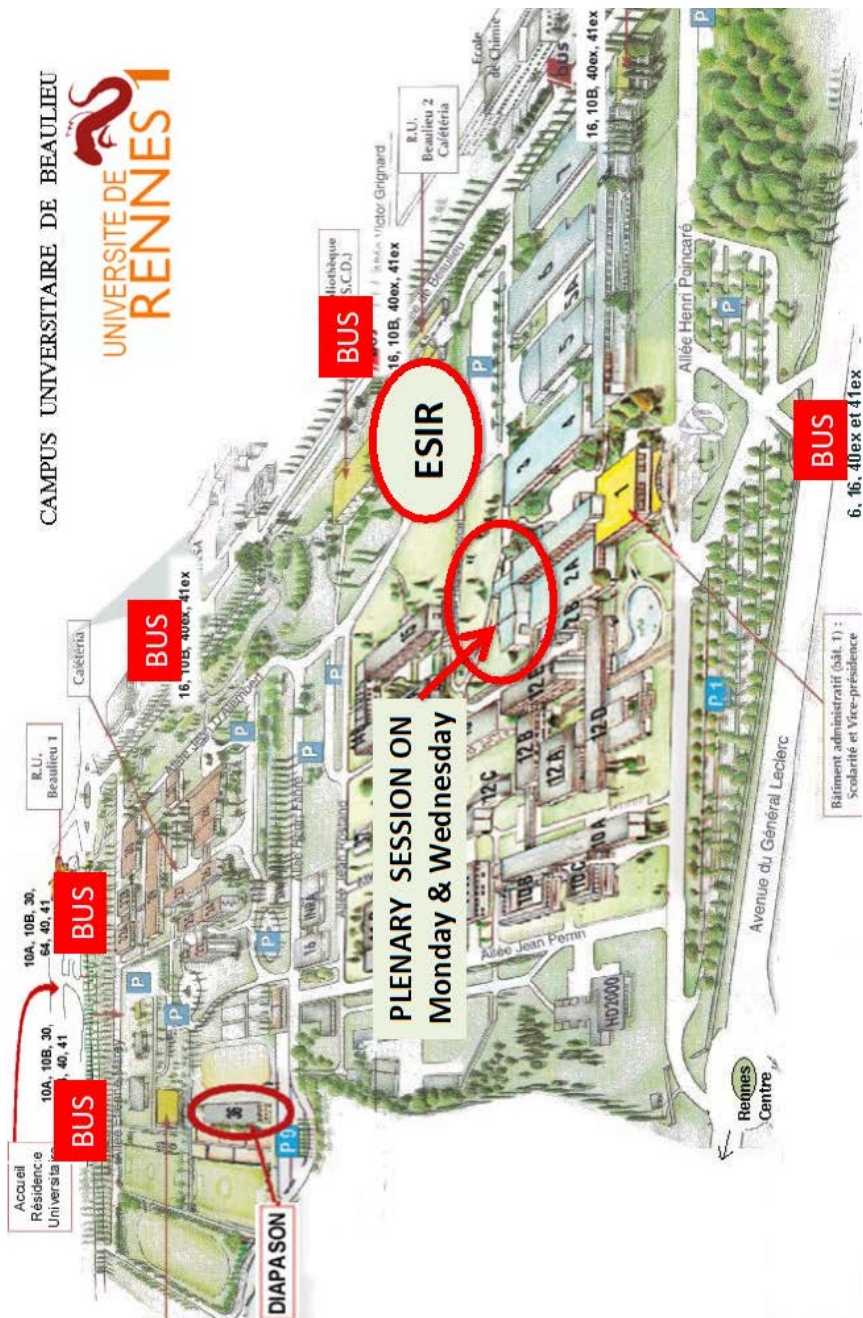
Chair of the Local Organizing Committee

Conference Information

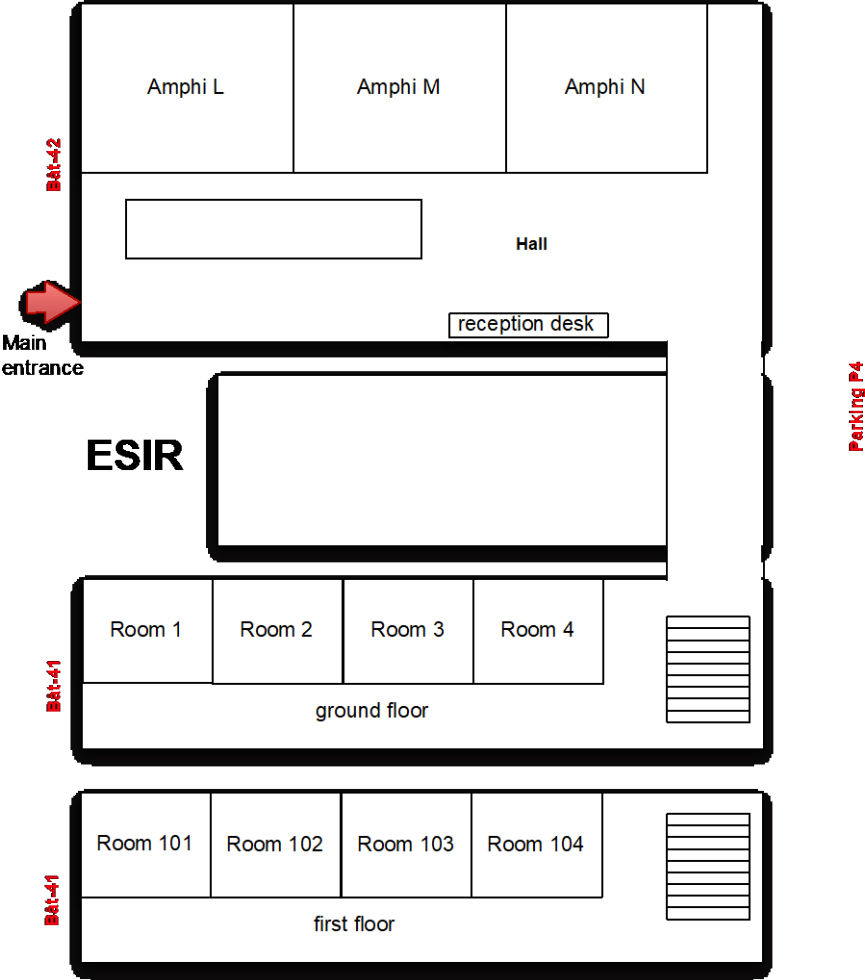
General Map



Map of the Campus de Beaulieu



Map of the ESIR School



Reaching Rennes and Transportation

Rennes is popular and it is very easy to access:

Rennes Airport is easily reached from Paris or several European capitals. It is located 15 minutes driving from the old city center. You can take bus 57 every 20 minutes to reach the old downtown in 30 minutes. Or you can take a taxi.

More than 5 TGV reach in 2h30 Rennes from Roissy airport railway station.

More than 10 TGV per day join Rennes from Paris in 1h30 from the Montparnasse railway station. To get to Montparnasse from Roissy airport, you have several possibilities:

- From Roissy airport take RER B, stop in metro Denfert-Rochereau and then go to Montparnasse metro line 6 (around 25 euros).
- To take an Air France bus **departing from each Terminal (Terminal 1, 2A, 2B, 2C, 2D, 2E, 2F)** (around 17 euros a single way). This is the easier option.
- From Orly, there is an Air France bus to Montparnasse which takes around 30 minutes for a modest cost of around 12 euros (20 euros return)

For your transportation in Rennes, the website <http://www.star.fr> will help you select the best journey (bus/metro). You can also choose to ride a bicycle. A special arrangement has been made with the Keolis society (public transportation society).

Rennes is probably the smallest town in the world with a metro. It has one line that could simplify your transportation from the railway station to downtown.

The main Rennes railway station "Gare de Rennes SNCF" is located in the heart of the city and can be easily reached by metro or bus. The network is extensive and serves the entire city: <http://www.star.fr>

Note that your **welcome bag will include a 3-day bus/metro travel pass** that will allow you to move around in Rennes for free.

Sunday Symposium

The symposium will take place in an old monastery, located at **Ecole Saint Vincent, 57 Rue de Paris, 35000 Rennes**.

From the airport, you can take either a taxi or bus 57 (every 20 minutes) to Rennes Republic (30 minutes) and take the line C3 (Bus stop Saint Vincent) or buses C6 or C4 (Bus stop Pont de Châteaudun). By bus, you will reach the symposium in 45 minutes (1.50 euro), and by taxi in 15 minutes (around 20 euros).

The topic of this year's symposium will be "**A Success story in CRT**" and "**Vagus nerve stimulation**" where six exciting talks by renowned cardiologist experts in the field will present the story, actual and future of cardiac stimulation, whatever the application (stimulation, resynchronization, follow-up, vagus nerve stimulation).

- 1:00 pm-1:45 pm: Registration
- 1:45 pm-2:00 pm: Opening remarks
- 2:00 pm: **A Success story in CRT**

DAUBERT Jean-Claude: *ESC Gold Medal, Ex Head of the Rennes cardiology cardiologist Department, History, Challenges, Computing algorithms, Importance of Medical Imaging*

HINDRICKS Gerhard: *Heart Center Leipzig, University of Leipzig, Department of Electrophysiology, Head of Department, Follow-up of Cardiac Decompensation*

LINDE Cecilia: *Karolinska Institute, Cardiologist, Stockholm, Sweden, Future trends, New Leads*

- 4:15 pm-4:45 pm: Coffee break
- 4:45 pm: **Vagus nerve stimulation**

DE FERRARI Gaetano - DUSI Veronica - : *Policlinico S Matteo, Pavia Italy and University of Pavia, Pavia Italy, Rationale of Vagus Nerve Stimulation*

ZANNAD Faiez: *Prof Cardiology Thérapeutic Inserm & University of Lorraine, Head of Centre d'Investigation Clinique Pierre Drouin, U 1116, Clinical trials and why they fail in Heart Failure*

HERNANDEZ Alfredo: *Directeur de Recherche INSERM, Université de Rennes 1, Head of the SEPIA Team LTSI-INSERM 1099, New Challenges in VNS*

- 6:15 pm-6:45 pm: Closing remarks and discussion
- 7:00 pm-11:00 pm: Reception at Ecole Saint Vincent, 57 Rue de Paris, Rennes

Conference site

The 44th annual international conference of Computing in Cardiology will meet at the Ecole Supérieure d'Ingénieurs de Rennes (also called ESIR), Campus de Beaulieu, University of Rennes 1, Rennes, France, from Monday, September 25th through Wednesday, September 27th, 2017.

The place is easily reachable by bus (bus stop "Ecole de Chimie" or "Tournebride" or "Insa," see "Map of the Campus de Beaulieu" above). During the Computing in Cardiology conference, KEOLIS (Rennes public bus transportation) will increase the density and the frequency of the buses in the morning and the

evening (a bus every 3 minutes). The conference is being held in lecture rooms as outlined:

- Opening and closing ceremonies Amphi Louis Antoine, **Building 2A**
- Regular oral sessions Room Amphi L, Amphi M, Amphi N,
Room 102, Room 103
- Poster sessions Room 1, 2, 3, 4

Please refer to the map “Map of the Campus de Beaulieu” and “ESIR School” above for room localizations. The buildings and lecture rooms will be clearly marked with the Computing in Cardiology signs.

Monday Social Program

All social program participants are required to wear their CinC badges.

Each year at CinC, Monday afternoon is set aside to facilitate a social event. This is an **important part of the conference program as it allows attendees to network and relax** in a more informal setting away from the scientific sessions.

In the afternoon, the traditional social program will be an opportunity to visit the second most visited place in France, Mont Saint-Michel. If you are activist, you will discover Mont Saint-Michel through an unforgettable manner which you will remember for the rest of your life. You need for this social program a bag, water, sunglasses, and sunscreen. If you are passivist, you will discover this marvelous city, steeped in history.

This exploration will finish with a marvelous gala dinner downtown, in one of the most active parts of Rennes.

The social program will start at 1:00 pm on Monday by taking buses to Mont Saint-Michel. As it is traditional in the Computing in Cardiology Social Program, participants choose between Activist or Passivist activities on the registration website. As the social program starts immediately after the sessions, the participants may consider comfortable, informal dress for the whole day. However, the dressing code for the gala dinner should **not** be streetwear style!

Activists will go to Mont Saint-Michel, eat at a farm and then depart to cross the bay, with periodic sub-group departures, will be organized by the guide.

Passivists will go to Mont Saint-Michel, eat at a farm and then depart to Mont Saint-Michel city, with scale departures, will be organized by the guide. For those who have reduced mobility, we have organized the visit of the entrance and initial streets of the Mont Saint-Michel, and then a virtual presentation of the Mont Saint-Michel will be proposed at the farm.

The Monday Gala Dinner will be at 8:00 pm at **Halle Martenot, Place des Lices, 35000 Rennes**. The simplest way to reach Place des Lices is to ask "Je souhaiterais me rendre Place des Lices s'il vous plaît". Joking aside, it is very easy to find this place (see General Map).

Tuesday Evening Reception

The mayor of the city will offer us a reception at the *city hall* at 7:30 pm Place de la Mairie (see General Map) to all conference participants, including accompanying persons. Some refreshments and "canapés" will be offered. If you would like a short visit to old Rennes street or Parlement de Bretagne (before 1532, Brittany was independent from France and joined France when Anne de Bretagne married Charles VIII and then Louis XII) will be offered for those who pre-registered on the website. For both activities, the meeting point is at 6:30 pm at the city hall place.

Wednesday Evening Reception

For those remaining in Rennes and planning to visit Brittany, a friendly snack will be served at 6:30 pm in a famous bar in Rennes.

Hotel & Practical Information

Accommodation

For any budget: from 5-star luxury hotels to 1-star hotels as well as tourist residences, youth hostels. On the Cinc2017 website, you have a direct connection to hotels with allotment with the conference, but you can choose other hotels.

Climate

Brittany generally has a very sunny September month which is also the month of the low and high tides. The weather in Rennes in September is usually moderate with daily temperatures ranging from 15°C to 20°C. In the evening, we recommend using a jacket or a pullover.

Opening hours

Shops are usually open from 9:00 am to 7:00 pm from Monday to Saturday. Department stores may stay open until 9:00 pm. Banks are open from 8.30 am to 12:00 am and 2:00 pm to 4:30 pm, Tuesday to Friday, with some branches also opening on Saturday mornings. Most banks are closed on Monday.

Money/currency

Credit cards are accepted in many shops, hotels, and restaurants (there is usually a minimum amount of between 7 euros and 15 euros). You will find cash-points on just about every street corner (24 hours a day).

Bank branches, exchange offices, and some post offices handle currency exchange transactions and traveler's cheques. Whatever you are buying, prices are net. A gratuity is, however, the custom in restaurants and for certain specific services (e.g. taxi cabs).

Emergency phone numbers

- Dial the following numbers (toll-free)
- SAMU (medical emergencies): 15
- Police emergency: 17
- Fire brigade: 18
- European emergency call: 112
- Local Committee: (+33) 6 76184813

Calling

- To call France in France: 0 + area number + number
- To call France from abroad: 00 + 33 + number
- To call abroad from France: 00 + country exchange number + number

Electric standards

220 Volts - 380 Volts / 50 Hertz

A few tips for a pleasant, trouble-free stay

- You are strongly recommended to respect smoking/no smoking signs in public places. By law, most bars and restaurants in France operate a non-smoking policy.
- It is always useful to bring some cash for out-of-pocket expenses like taxi fares to the airport, drinks, etc.
- A service charge is included in the price of each item on the menu in any cafe or restaurant as required by French law. In theory, no further tipping is expected. However, it is pretty common to leave something after a bite to eat or a drink, especially when the service is good or attentive, or at a place where you are a frequent customer. Extra generosity will never hurt.
- If you are driving, park only where authorized and respect speed limits on highways and motorways.

Useful links

<http://www.rennes-congres.fr> and <http://www.tourisme-rennes.com>

Places to visit around Rennes and in Brittany

Please have a look on the website cinc2017.org for an ideal journey.

General Information

The conference registration and information desk will be located at Ecole Saint Vincent on Sunday and ESIR on the other days. The registration desk will be labeled with the CinC sign and will be open during the following hours:

- Sun, 24th September 1:00 pm – 6:00 pm: Ecole Saint Vincent
- Mon, 25th September 08:00 am – 1:00 pm : ESIR
- Tues, 26th September 08:00 am – 6:00 pm: ESIR
- Wed, 27th September 08:00 am – 6:00 pm: ESIR

Internet Access

Within the conference rooms, a wireless network will be available free of charge. Each participant will have a login and a password in his/her bag. For those using **Eduroam**, this network is available at the conference site. The only device you need is a WiFi-enabled laptop or smartphone. Should you need assistance in getting connected, please ask the nearest volunteer for help. Free WiFi access will be provided.

Meals

The delegates will not have to worry about meals. To ensure that the meeting is running in a timely fashion, the attendees are kindly asked to proceed quickly to the restaurant or buffet immediately after the session finishes.

- The **Sunday** symposium concludes with a cocktail at 7:00 pm in the splendid and unique old monastery Saint Vincent (see "Sunday Symposium" section above).
- **Monday** lunch box will be served in a unique and fantastic site, Mont Saint-Michel. You will have to wait until 1:30 pm for lunch, but you will be rewarded!
- **Monday** social event concludes with a dinner at 8:00 pm in the marvelous Halle Martenot in Place des Lices, one of the most majestic sites in Brittany (the location is in the city center Map).
- **Tuesday** buffet lunch will be provided on the Campus after the sessions and over-lapping the Poster session from 1:00 pm to 3:00 pm.
- After Tuesday sessions, participants are invited to travel to Place de la Mairie to enjoy a reception offered at 7:30 pm by the city hall. (Group transportation is not provided for this visit). If you would like to attend, both the old town visit or Parlement de Bretagne visit will begin at 6:30 pm.
- **Wednesday** buffet lunch will be served in the University Restaurant of the Campus after the sessions and overlapping the Poster session, from

1:00 pm to 3:00 pm. For the end of the conference, a Farewell snack will be given after 6:30 pm in a famous bar in Rennes.

Accompanying Persons (Guests)

The accompanying person (guest) registration allows the guest to attend:

- The visit and reception on Sunday evening at the Ecole Saint Vincent, 57 Rue de Paris, Rennes (see "Sunday Symposium" section below).
- The Monday social event starting at 1:00 pm with lunch, participation as an activist or passivist in the activities and in the gala dinner, to be held at 8:00 pm at the Hall Martenot (see General Map).
- The Tuesday reception at the city hall at 7:30 pm (see General Map - Place de la Mairie).
- The Wednesday farewell snack will be held after 6:30 pm in a famous bar in Rennes.

For Authors and Speakers

Oral Presentations

The time allocated for each oral presentation is 10 minutes, followed by 5 minutes for discussion. Speakers are expected to adhere strictly to this schedule, which will be enforced by session chairpersons to finish sessions on time and to permit participants to move successfully from one parallel session to another.

- All conference rooms will be equipped with a computer projection system (LCD projector and PC with Windows 7, Powerpoint 2013, Windows Media Player and Adobe Acrobat Reader).
- Due to Powerpoint version issues, PDF format is probably the most reliable one.
- Some MacBooks will also be at disposal.

Speakers are required to allow adequate time before their session to load and check their presentation. Also, speakers are required to meet with their session chairpersons in the scheduled conference room at least 10 minutes before the beginning of the session. It is a good idea to ensure that the chairperson knows how to pronounce your name correctly.

Poster Presentations

Poster sessions will take place in rooms 1, 2, 3, 4 (see ESIR map). Poster session P6 is on Tuesday, 26th September from 12:00-14:00, and Poster session PB is on Wednesday, 27th September, from 12:30-14:30. Authors are required to be present at their posters during their assigned session to discuss their work with other conference attendees.

- Check in: Authors presenting posters must check in with the session chair in the exhibition center during the 30 minutes before the poster sessions in which their presentations are scheduled.
- Posters may be hung after 8:30 am and prior to the start of the poster sessions for both P6 and PB.
- Posters stands and mounting material will be provided. Note that this year the maximum poster dimensions are A0 format. Posters may be a maximum of 84.1 cm wide and 118.9 cm tall.
- Posters are grouped by subject area, and each poster should be placed on the stand assigned to it (marked with a card corresponding to the page number of the abstract in the program book).
- If an author is not present to present a poster, it will not be published in the proceedings.
- Posters must be removed immediately after the end of the sessions to allow the timely cleaning of the Exhibition room.

Rosanna Degani Young Investigator Award

Computing in Cardiology hosts an annual competition to encourage young investigators and to provide a living memorial to Rosanna Degani.

Finalists in the competition will present their work in session M1, at 8:00 am on Monday, 25th September in room Amphitheatre Charles Antoine (see Map of the Campus de Beaulieu for details). The name of the winner will be announced during the closing plenary session on Wednesday.

Clinical Needs Translational (CTA) Award

Computing in Cardiology and the Working Group of e-Cardiology of the European Society of Cardiology (ESC) support this award designed to encourage participation of multidisciplinary research teams, with emphasis on the potential clinical applicability and impact of the research.

A representative of the winner team of this competition will present their work at the beginning of the Closing Plenary Session on Wednesday, 27th September in room Amphitheatre Charles Antoine (see Map of the Campus de Beaulieu for details).

PhysioNet/Computing in Cardiology Challenge 2017

Since 2000, Computing in Cardiology has annually issued a Physionet Challenge in cooperation with Physionet, part of the NIH sponsored Research Resource for Complex Physiologic Signals. The aim of this year's challenge is "AF Classification from a Short Single Lead ECG Recording". The challenge sessions are:

- Oral session S51 & SC1
- Poster sessions P69 & PB9
- Poster session P6A addresses follow-ups to previous challenges

Manuscripts

Computing in Cardiology will publish the conference proceedings containing the complete manuscripts of all presentations made at the conference. The complete proceedings will be freely available via the CinC Web site (<http://www.cinc.org>). The proceedings will also be published by IEEE in the IEEEXplore digital library. For any questions about manuscripts, consult the CinC web site <http://www.cinc.org> or contact via email editor@cinc.org.

Program Overview

Sunday, September 24, 2017

- 13:00 Sunday, September 24, 2017 Symposium Registration
- 14:00 Symposium Part I: A Success Story in CRT, Chairpersons: Christophe Leclercq, Professor, Head of the cardiology Department of Rennes Hospital & Philippe Mabo, Professor, Head of the Unit Heart Lung and Vessels, Rennes Hospital
- 14:10 DAUBERT Jean-Claude ESC Gold Medal, Ex Head of the Rennes Cardiology Department History, Challenges, Computing algorithms, Importance of Medical Imaging
- 14:45 HINDRICKS Gerhard : Heart Center Leipzig, University of Leipzig, Department of Electrophysiology, Head of Department Follow-up of Cardiac Decompensation
- 15:30 LINDE Cecilia: Karolinska Institute, Cardiologist, Stockholm, Suède Future trends, New Leads
- 16:15 Coffee Break
- 16:45 Symposium Part II: Vagus Nerve Stimulation, Chairpersons: Christophe Leclercq, Professor, Head of the cardiology Department of Rennes Hospital & Philippe Mabo, Professor, Head of the Unit Heart Lung and Vessels, Rennes Hospital
- 16:55 DE FERRARI Gaetano - DUSI Veronica - : Policlinico S Matteo, Pavia Italy and University of Pavia, Pavia Italy, Rationale of Vagus Nerve Stimulation
- 17:30 ZANNAD Faiez: Prof Cardiology Thérapeutic, Inserm & University of Lorraine, Head of Centre d'Investigation Clinique Pierre Drouin and INSERM 1116 Clinical trials and why they fail
- 18:00 HERNANDEZ Alfredo: Directeur de Recherche INSERM, Université de Rennes I Head of the SEPIA Team LTSI-INSERM 1099 New Challenges in VNS
- 19:00 Welcome Reception

Monday, September 25, 2017

- 8:00 Welcome to CinC 2017
- 8:10 M1: Rosanna Degani Young Investigator Finals
- 9:30 Coffee Break
- 9:45 S21: Resuscitation
- 9:45 S22: Diagnostic ECG
- 9:45 S23: SA Node & Atrial Conduction
- 9:45 S24: Sensors, Seismocardiography and Ballistocardiography
- 11:15 Coffee Break

11:30	S31: Vascular Imaging
11:30	S32: Cardiac Rotors in Arrhythmia
11:30	S33: Arrhythmias & Exercise
11:30	S34: Sudden Cardiac Death
12:30	Social Event

Tuesday, September 26, 2017

8:30	S41: Imaging for EP Interventions
8:30	S42: Detection of Atrial Fibrillation
8:30	S43: ECG Imaging
8:30	S44: Predictive Modelling of Cardiac Cells
10:00	Coffee Break
10:30	S51: Challenge I
10:30	S52: Long Term Monitoring
10:30	S53: ECG Imaging II
10:30	S54: MRI-based Cardiac Mechanics
12:00	Lunch
12:30	P6: Poster Session with Lunch
12:30	P61: Phonocardiography
12:30	P62: ECG Criteria and Signal Processing
12:30	P63: Ventricular Arrhythmias
12:30	P64: Mapping & Miscellaneous Arrhythmias
12:30	P65: Atrial Modelling
12:30	P66: Health Informatics & Technology
12:30	P67: Modelling Therapy
12:30	P68: Heart Rate Variability in Applications
12:30	P69: Challenge Posters I
12:30	P6A: Previous Challenges
14:30	Coffee Break
14:45	S71: Imaging Cardiac Motion
14:45	S72: Invasive Recordings and Atrial Fibrillation
14:45	S73: ECG/EG-based Analysis
14:45	S74: Heart Rate Variability
14:45	S75: Arrhythmias & Signal Processing
16:15	Coffee Break
16:30	S81: Cardiovascular Mechanics

- 16:30 S82: Repolarization
- 16:30 S83: Heart and Thorax Modelling
- 16:30 S84: Sleep Apnea
- 16:30 S85: ECG Analysis

Wednesday, September 27, 2017

- 8:30 S91: ECG Imaging III
- 8:30 S92: Cardiac Mechanics & Heart Failure
- 8:30 S93: Databases & Algorithm Development
- 8:30 S94: Heart Rate Analysis
- 10:00 Coffee Break
- 10:15 SA1: ECG in Exercise and Ischemia
- 10:15 SA2: Photoplethysmography & Sensor Technology
- 10:15 SA3: Cardiovascular Responses
- 10:15 SA4: Non-invasive Characterization of Atrial Fibrillation
- 12:00 PB: Poster Session with Lunch
- 12:00 PB1: Cardiovascular Imaging
- 12:00 PB2: Cardiovascular Mechanics
- 12:00 PB3: ECG Miscellaneous
- 12:00 PB4: Ventricular Modelling
- 12:00 PB5: Heart Rate Variability
- 12:00 PB6: Blood Pressure
- 12:00 PB7: System Analysis in Fetal and Pre-term Populations
- 12:00 PB8: Atrial Fibrillation
- 12:00 PB9: Challenge Posters II
- 14:00 Break
- 14:15 SC1: Challenge II
- 14:15 SC2: Special Session: Clinical Guidelines in e-Health: Where do we stand?
- 14:15 SC3: Special Session: Electrocardiographic Imaging: Challenges in Clinical Evaluation and Validation
- 14:15 SC4: Special Session: Understanding the Mechanisms of Atrial Fibrillation using Novel Computational Approaches
- 15:45 Break
- 16:00 MD: Closing Plenary
- 17:00 Closing Ceremony
- 17:30 Conference Closes

Program Details

M1 Rosanna Degani Young Investigator Finals

Chairs: Pablo Laguna and Olaf Doessel

Room: Amphi Louis Antoine

1-169 Comparison between Cardiac Baroreflex Sensitivity Estimates Derived from Sequence and Phase Rectified Signal Averaging Techniques During Head-up Tilt

8:10-8:30 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

8:30-8:50 Alejandro Liberos*, Alfonso Bueno-Orovio, Miguel Rodrigo, Ismael Hernández-Romero, Maria de la Salud Guillem Sánchez, Francisco Fernandez-Aviles, Felipe Atienza, Blanca Rodriguez, Andreu M. Climent

3-70 GPU Implementation of Levenberg-Marquardt Optimization for T1 Mapping

8:50-9:10 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

9:10-9:30 Alessandro Masci*, Martino Alessandrini, Luca Dedò, Davide Forti, Filippo Menghini, Corrado Tomasi, Alfio Quarteroni, Cristiana Corsi

S21 Resuscitation

Chairs: Sofia Ruiz de Gauna and Di Ge

Room: Amphi L

5-72 A Simple Algorithm for Ventilation Detection in the Capnography Signal During Cardiopulmonary Resuscitation

9:45-10:00 Mikel Leturiondo*, Jesus Ruiz, Sofia Ruiz de Gauna, Digna M Gonzalez-Otero, Josi M Bastida, Mohamud Daya

6-81 Chest Compression Metrics During Manual Cardiopulmonary Resuscitation: a Manikin Study

10:00-10:15 Sofia Ruiz de Gauna*, Digna M Gonzalez-Otero, James K Russell, Jesus Ruiz, Sara Pelayo, Purificacion Saiz

7-265 An Investigation into the Use of the Impedance Cardiogram as a Predictor of Manual Chest Compression Efficacy

10:15-10:30 Olibhiar McAlister*, Dewar D. Finlay, Raymond R. Bond, Daniel Guldenring, Ben McCartney, Laura Davis, Hannah Torney, Paul Crawford, Frances Denny, Rebecca Funston, David McEneaney

8-79 Closed-loop Adaptive Filtering for Suppressing Chest Compression Oscillations in the Capnogram during Cardiopulmonary Resuscitation

10:30-10:45 Mikel Leturiondo*, J.J. Gutierrez, Sofia Ruiz de Gauna, Sandra Plaza, Jose F Veintemillas, Mohamud Daya

9-115 Removing Piston-driven Mechanical Chest Compression Artefacts from the ECG

10:45-11:00 Iraia Isasi*, Unai Irusta, Elisabete Aramendi, Unai Ayala, Erik Alonso, Jo Kramer-Johansen, Trygve Eftestol

10-254 Blinded Analysis of an Exercise ECG Database Using High Frequency QRS Analysis

11:00-11:15 Noam Omer*, Yair Granot, Jari Viik, Shimon Abboud

S22

Diagnostic ECG

Chairs: Pyotr Platonov and Cadathur Rajagopalan

Room: Amphi M

11-62

T-wave Alternans Presence in Young Competitive Athletes – to Be or Not to Be Accepted as a Prognostic Factor?

9:45-10:00

Iana Simova*, Ivan Gruev, Giovanni Bortolan, Ivaylo Christov, Sofia Georgieva

12-318

Multiscale Multifractal Analysis as a Screening Examination Tool

10:00-10:15

Dorota Kokosinska*, Jan Gierałtowski, Jan Żebrowski, Rafał Baranowski

13-116

Specificity of New Diagnostic Criteria for Left Ventricular Hypertrophy

10:15-10:30

Elaine Clark, Peter Macfarlane*

14-61

Detecting ECG Limb Lead-wire Interchanges Involving the Right Leg Lead-wire

10:30-10:45

Richard Gregg*, E. William Hancock, Saeed Babaeizadeh

15-186

Tensor-based Analysis of ECG Changes Prior to In-Hospital Cardiac Arrest

10:45-11:00

Griet Goovaerts*, Sabine Van Huffel, Xiao Hu

16-6

Electrocardiographic Parameters Indicative for Increased Risk of Adverse Events in Diabetics after Coronary Artery Bypass Grafting

11:00-11:15

Dimiter Simov, Ivaylo Christov, Iana Simova*, Mikhail Matveev, Ivo Petrov

S23 SA Node & Atrial Conduction

Chairs: Stefano Severi and Beatriz Trenor

Room: Amphi N

17-8 Bradycardic Effects of Mutations in the HCN4 Gene at Different Levels of Autonomic Tone in Humans

9:45-10:00 Alan Fabbri, Arie O. Verkerk, Stefano Severi, Ronald Wilders*

18-358 Electrophysiological Parameters in the Electrical Propagation During Atrial Fibrillation: a Population of Models Study

10:00-10:15 Ana Simon Chica, Alejandro Liberos*, Ismael Hernández-Romero, Alfonso Bueno Orovio, Miguel Rodrigo, Maria de la Salud Guillem Sanchez, Felipe Atienza, Francisco Fernandez-Aviles, Blanca Rodriguez, Andreu M. Climent

19-15 Asymmetry of Unipolar Electrograms in a Thin Tissue with Epicardial-Endocardial Activation Delay

10:15-10:30 Eric Irakoze, Halekote Ramesh Chirasvi, Vincent Jacquemet*

20-44 Differential Sensitivities of Functionally Calibrated Populations of Atrial Cells to Pro-arrhythmia Markers in Normal Sinus Rhythm versus Chronic Atrial Fibrillation

10:30-10:45 Marcia Vagos*, Hermenegild Arevalo, Bernardo Lino de Oliveira, Joakim Sundnes, Mary Maleckar

21-424 Mechanism of Sinus Bradycardia in Carriers of the 1795insD Mutation in the SCN5A Gene

10:45-11:00 Ronald Wilders*

22-271 A Three-dimensional Computational Model of Action Potential Propagation through a Network of Individual Cells.

11:00-11:15 Pierre-Elliott Bécue*, Mark Potse, Yves Coudi re

Monday, September 25, 2017

9:45

S24	Sensors, Seismocardiography and Ballistocardiography Chairs: Eduardo Gil and Enrico Caiani Room: Room 102
23-190	Clinical Performance of High Frequency QRS Analysis for Detecting Ischemia Using Limited Sampling Rate 9:45-10:00 Noam Omer*, Yair Granot, Shimon Abboud
24-311	Contactless Mapping of Thoracic and Abdominal Movements: Applications for Seismocardiography 10:00-10:15 Pavel Shirkovskiy*, Alexandre Laurin, Mathias Fink, Dominique Chapelle, Ros K. Ing
25-203	Potential of Seismocardiography for Optimization of Cardiac Resynchronization Therapy 10:15-10:30 Kasper Sørensen, Ajay Verma, John Zanetti, Samuel Emil Schmidt, Johannes Struijk, Kouhyar Tavakolian*
26-452	Potential of Seismocardiogram for Non-invasive and Continuous Blood Pressure Monitoring 10:30-10:45 Kasper Sørensen, Ajay Verma, Andrew Blaber, John Zanetti, Samuel Emil Schmidt, Johannes Struijk, Kouhyar Tavakolian*
27-381	Signal Detection Accuracy of Digital Accelerometers for Ballistocardiographic Propose 10:45-11:00 Nico Jöhne-Raden*, Klaus-Hendrik Wolf, Michael Marschollek
28-317	Respiratory Rate Detection Using a Camera as Contactless Sensor 11:00-11:15 Luca Iozzia*, Jesus Lazaro, Eduardo Gil, Luca Cerina, Luca Mainardi, Pablo Laguna

Monday, September 25, 2017

11:30

S31

Vascular Imaging

Chairs: Nadjia Kachenoura and Jean-Louis Dillenseger

Room: Room 102

29-481

Flow Imaging using MRI (Special Talk)

11:30-12:00

Nadjia Kachenoura*

30-328

Automatic Lumen Segmentation of Intravascular Optical
Coherence Tomography Images by Adaptive
Thresholding

12:00-12:15

Ali Pourmodheji*, Arash Taki

31-459

Wavelet Analysis for Multiresolution Tissue
Characterization in Intracoronary Optical Images

12:15-12:30

Maysa M G Macedo*, Pedro Nicz, Carlos Campos, Pedro
Lemos, Marco Antonio Gutierrez

S32 Cardiac Rotors in Arrhythmia

Chairs: Andreu Climent and Stef Zeemering

Room: Amphi M

**32-348 Tracking Pivot Point of a Numerically Simulated
Meandering Rotor Using Recurrence Period Density
Entropy**11:30-11:45 Shivaram Poigai Arunachalam*, Suraj Kapa, Siva Mulpuru, Paul
Friedman, Elena Tolkacheva**33-196 Image-based Computational Evaluation of the
Competing Effect of Atrial Wall Thickness and Fibrosis
on Re-entrant Drivers for Atrial Arrhythmias**

11:45-12:00 Aditi Roy*, Marta Varela, Oleg Aslanidi

**34-43 Spiral-wave Instability in a Medium with a Gradient in
the Fibroblast Density: a Computational Study**

12:00-12:15 Soling Zimik*, Rahul Pandit

**35-307 Optimized Adjustment of a Reaction-diffusion Model to
Case-specific Atrial Physiology: towards Clinical
Implementation**12:15-12:30 Pedro Lind*, Yvonne Richter, Gunnar Seemann, Claudia Lenk,
Philipp Maass

Monday, September 25, 2017

11:30

S33 Arrhythmias & Exercise

Chairs: Richard Gregg and Laura Burattini

Room: Amphi N

36-413 Cardiac Computing and Prevention of Sudden Cardiac
Death in Athletes (Clinical Talk)

11:30-12:00 Frederic Schnell*

37-315 RR Stress Test Time Series Classification Using Neural
Networks

12:00-12:15 Wilson Jaramillo*, Darwin Astudillo-Salinas, Lizandro Solano-
Quinde, Kenneth Palacio-Baus, Sara Wong

38-430 Evaluation of Changes in T-wave Alternans Induced by
60 Days of Immobilization by Head-down Bed-rest

12:15-12:30 Alba Martin*, Violeta Monasterio, Pablo Laguna, Juan Pablo
Martvnez, Enrico Caiani

S34**Sudden Cardiac Death**

Chairs: Lofti Senhadji and Cees Swenne

Room: Amphi L

39-243

Optimisation of the Global Re-entry Vulnerability Index to Minimise Cycle Length Dependency and Prediction of Ventricular Arrhythmias During Human Epicardial Sock Mapping

11:30-11:45 Michele Orini*, Peter Taggart, Martin Hayward, Pier Lambiase

40-388

Influence of KCNQ1 S140G Mutation on Human Ventricular Arrhythmogenesis and Pumping Performance

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

41-280

Automatic Coordinate Prediction of the Exit of Ventricular Tachycardia from 12-Lead Electrocardiogram

12:00-12:15 Prashnna Gyawali*, Shuhang Chen, Huafeng Liu, B. Milan Horacek, John L. Sapp, Linwei Wang

42-345

Electrical and Anatomical Imaging of Arrhythmogenic Substrates for Scar-related Ventricular Tachycardia

12:15-12:30 Omar Gharbia, Susumu Tao, Albert C. Lardo, Henry Halperin, Linwei Wang*

S41 Imaging for EP Interventions

Chairs: Antoine Simon and Samuel Schmidt

Room: Amphi L

43-479 Prediction of Response to Cardiac Resynchronization Therapy: the Value of Cardiac Work When Compared to Other Dyssynchrony Parameters (Clinical Talk)

8:30-9:00 Erwan Donal*

44-466 Integration of Electrical, Structural, and Anatomical Imaging for the Guidance of Cardiac Resynchronization Therapy

9:00-9:15 Uyen Chau Nguyen*, Matthijs Cluitmans, Casper Muhl, Justin J.G. Luermans, Bas L.J.H. Kietselaer, Sebastiaan C.A.M. Bekkers, Suzanne Gommers, Paul Volders, Frits W. Prinzen, Kevin Vernooij

45-436 Preliminary Computational Framework to Map MRI-Derived Markers to Predict Response to Cardiac Resynchronization Therapy

9:15-9:30 Carolina Vallecilla*, Martino Alessandrini, Claudio Fabbri, Corrado Tomasi, Cristiana Corsi, Stefano Severi

46-227 Multimodal Image Integration for Catheter Ablation of Ventricular Tachycardia

9:30-9:45 Nicolas Courtial*, Antoine Simon, Mathieu Lederlin, Sophie Bruge, Raphaël P. Martins, Mireille Garreau

47-306 A Platform for Quantifying Atrial Structural Remodelling

9:45-10:00 Orod Razeghi*, Rashed Karim, John Whitaker, Catalina Tobon Gomez, Steven Niederer

S42 Detection of Atrial Fibrillation

Chairs: Pietro Bonizzi and Pawel Kuklik

Room: Amphi M

48-128 Detection of Atrial Fibrillation Using an Earlobe Photoplethysmographic Sensor

8:30-8:45 Thomas Conroy*, Jairo Hernandez Guzman, Burr Hall, Gill Tsouri, Jean-Philippe Couderc

49-11 Photoplethysmogram Modeling During Paroxysmal Atrial Fibrillation: Detector Evaluation

8:45-9:00 Andrius Sološenko*, Andrius Petrėnas, Vaidotas Marozas, Leif Sørnmo

50-177 Validating Features for Atrial Fibrillation Detection from Photoplethysmogram under Hospital and Free-living Conditions

9:00-9:15 Linda M. Eeriköinen*, Lukas Dekker, Alberto G. Bonomi, Rik Vullings, Fons Schipper, Jenny Margarito, Helma M. de Morree, Ronald M. Aarts

51-153 Signal Quality Assessment of F-waves in Atrial Fibrillation

9:15-9:30 Mikael Henriksson*, Andrius Petrėnas, Vaidotas Marozas, Frida Sandberg, Leif Sørnmo

52-220 Identification of Atrial Fibrillation Episodes Using a Camera as Contactless Sensor

9:30-9:45 Valentina Corino*, Luca Iozzia, Andrea Mariani, Giacomo D'Alessandro, Claudia D'Ettorre, Luca Cerina, Giorgio Scarpini, Federico Lombardi, Luca Mainardi

S43

ECG Imaging

Chairs: Natalia Trayanova and Jana Svehlikova

Room: Amphi N

53-337

A 64-Lead Body Surface Potential Mapping System

8:30-8:45

Joyo Salinet, Victor Marques*, Marcelo Mazzeto, Erick Camargo, Carlos Pastore, Idogene Cestari

54-387

ECG-Based Reconstruction of Heart Position and Orientation with Bayesian Optimization

8:45-9:00

Jaume Coll-Font*, Dana Brooks

55-391

Effect of the Geometric Inaccuracy in MARS-based Inverse ECG Solution Approach

9:00-9:15

Önder Nazım Onak*, Yeşim Serinağaoğlu Doğrusöz, Gerhard Wilhelm Weber

56-347

Exploring Possible Choices of the Tikhonov Regularization Parameter for the Method of Fundamental Solution in Electrocardiography

9:15-9:30

Judit Chamorro-Servent*, Rımi Dubois, Yves Coudière

57-305

L₀ Norm Based Sparse Regularization for Non-invasive Infarct Detection Using ECG Signal

9:30-9:45

Sandesh Ghimire*, Linwei Wang

58-404

Inverse Localization of Intraventricular Pacing Sites by Equivalent Dipole Source

9:45-10:00

Jana Svehlikova*, Milan Tysler

S44 Predictive Modelling of Cardiac Cells

Chairs: Ronald Wilders and Michelangelo Paci

Room: Room 102

59-266 Using Populations of Models to Navigate Big Data in Electrophysiology: Evaluation of Parameter Sensitivity of Action Potential Models

8:30-8:45 Carlos Ledezma*, Benjamin Kappler, Veronique Meijborg, Bas Boukens, Marco Stijnen, PJ Tan, Vanessa Diaz-Zuccarini

60-109 Identification of Parameters Describing Phenomenological Cardiac Action Potential Models using Sigma-point Methods

8:45-9:00 Jesus Fernandez-Bes*, David Adolfo Sampedro-Puente, Esther Pueyo

61-250 In Silico Assessment of Nifedipine Effects on Human Heart Cells: Pharmacokinetic-pharmacodynamic Analyses at the Population Level

9:00-9:15 Mitra Abbasi*, Sebastian Polak

62-263 Sensitivity Analysis of the QT and JTpeak Intervals from a High-resolution Human Left-ventricular Wedge Model

9:15-9:30 Massimo W Rivolta*, Roberto Sassi, Viatcheslav Gurev, John J Rice, Coeli M Lopes, Jean-Philippe Couderc

63-126 Estimation of Drug Parameters for in Silico MEA/hiPSC-CM Assays

9:30-9:45 Julien Bouyssier, Nejib Zemzemi*

64-312 IKs Computational Modeling to Enforce the Investigation of D242N, a KV7.1 LQTS Mutation

9:45-10:00 Chiara Bartolucci*, Cristina Moreno, Anna Oliveras, Carmen Mupo, Alicia de la Cruz, Diego A. Peraza, Juan R Gimeno, Mercedes Martvn-Martvnez, Stefano Severi, Antonio Felipe, Pier D Lambiasi, Teresa Gonzalez, Carmen Valenzuela

S51

Challenge I

Chairs: Gari Clifford and David Albert

Room: Amphi L

65-469

AF Classification from a Short Single Lead ECG

Recording: the Physionet Computing in Cardiology

Challenge 2017

10:30-10:45

Gari Clifford*, Chengyu Liu, Benjamin Moody, Ikaro Silva, Qiao Li, Alistair Johnson, Roger Mark

66-138

Robust ECG Signal Classification Using Neural Networks

Enhanced by Novel Data Synthesis Models

10:45-11:00

Zhaohan Xiong*, Martin Stiles, Jichao Zhao

67-120

Heart Rhythm Classification using Short-term ECG Atrial and Ventricular Activity Analysis

11:00-11:15

Sasan Yazdani*, Priscille Laub, Adrian Luca, Jean-Marc Vesin

68-247

Enhancing The Performance of Atrial Fibrillation

Detection by Boosting and Stacking Techniques

11:15-11:30

Dawid Smoleń*

69-336

Detection of Atrial Fibrillation in ECG Hand-held Devices

Using a Random Forest Classifier

11:30-11:45

Morteza Zabihi*, Ali Bahrami Rad, Aggelos K. Katsaggelos, Serkan Kiranyaz, Susanna Narkilahti, Moncef Gabbouj

70-60

A Convolutional Recurrent Neural Network for Electrocardiogram Classification

11:45-12:00

Martin Zihlmann, Dmytro Perekretenko*, Michael Tschannen

Tuesday, September 26, 2017

10:30

S52

Long Term Monitoring

Chairs: Roberto Sassi and Frida Sandberg

Room: Room 102

71-458

Wrist and Arm Body Surface Bipolar ECG Leads Mapping
Study for Long-term Rhythm Monitoring

10:30-10:45

Omar Escalona*, Louise McFrederick, Maira Borges, Pedro Linares, Ricardo Villegas, James McLaughlin, David McEneaney

72-464

Arm-ECG Bipolar Leads Signal Recovery Methods for
Wearable Long-term Heart Rate and Rhythm Monitoring

10:45-11:00

William David Lynn, Omar Escalona*, Pedro Vizcaya, David McEneaney

73-212

Distant Pulse Measurement System for Real-Time
Surveillance Applications

11:00-11:15

Jaromir Przybyło, Mirosław Jabłoński, Eliaz Kańtoch*, Piotr Augustyniak

S53**ECG Imaging II**

Chairs: Niels Otani and Peter Johnston

Room: Amphi M

74-478

Noninvasive Electrocardiographic Imaging for Individuals at Risk for Idiopathic Ventricular Fibrillation (Clinical Talk)

10:30-11:00 Paul Volders*

75-284

Evaluation of Inverse Problem with Slow-Conducting Channel in Scar Area in a Post-Infarction Model

11:00-11:15 Zexi Chen, Miguel Rodrigo*, Alejandro Liberos, Ismael Hernández-Romero, Jesus Requena, Andreu M. Climent, Maria de la Salud Guillem Sanchez

76-320

A Volumetric Inverse Model Formulation Based on Transmembrane Current Sources

11:15-11:30 Yves Coudi re, Mark Potse, Lisl Weynans*

77-438

On the Correctness of the Transmembrane Potential Based Inverse Problem of ECG

11:30-11:45 Vitaly Kalinin*, Alexander Kalinin, Walther Schulze, Danila Potyagaylo, Alexander Shlapunov

S54 MRI-based Cardiac Mechanics

Chairs: Mireille Garreau and Victor Mor-Avi

Room: Amphi N

78-172 Assessment of Aortic Pulse Wave Velocity Using 4D Flow Magnetic Resonance Imaging: Methods Comparison

10:30-10:45 Sophia Houriez--Gombaudo-Saintonge*, Elie Mousseaux, Ioannis Bargiotas, Alain De Cesare, Thomas Dietenbeck, Kevin Bouaou, Alban Redheuil, Gilles Soulat, Umit Gencer, Yasmina Chenoune, Nadjia Kachenoura

79-88 Bayesian Classification Applied to Strain in Arrhythmogenic Left-Ventricle Cardiomyopathy

10:45-11:00 Yolanda Vives-Gilabert*, Begona Igual, Santiago Jimenez, Jorge Sanz, Raquel Cervigon, Antonio Cebrian, Jose Manuel Santabarbara, Josu Millet, Esther Zorio, Francisco Castells

80-180 Relative Aortic Blood Pressure Using 4D Flow MRI: Associations with Age and Aortic Tapering

11:00-11:15 Kevin Bouaou*, Ioannis Bargiotas, Damian Craiem, Gilles Soulat, Thomas Dietenbeck, Sophia Houriez--Gombaudo-Saintonge, Alain De Cesare, Umit Gencer, Alain Giron, Alban Redheuil, Didier Lucor, Elie Mousseaux, Nadjia Kachenoura

81-396 Semi-automated Detection of Time-varying Contour for the Quantification of Mitral and Aortic Flow by Phase Contrast MRI

11:15-11:30 Enrico Caiani*, Federica Landreani, Giovanni Riso, Pierre Vaida, Pierre-François Migeotte

82-34 Deep Learning in Left Ventricles Localization in MRI Cardiac Images

11:30-11:45 Abdulkader Helwan*

P61 Phonocardiography

Room: Rooms 1-4

83-290 Classification of Congenital Heart Disease Using SVM-MFCC from Phonocardiograph

Gholamreza Attarodi*, Asghar Tareh, Nader Jafarnia Dabanloo, Keivan Maghooli

84-296 Detection of Aortic Stenosis from PCG Signals Using Wavelet Packet Decomposition (WPD) and Parametric Models

Nader Jafarnia Dabanloo*, Pegah Derakhshan Mehr, Gholamreza Attarodi, Nazanin Hemmati, Keivan Maghooli

85-76 Second Heart Sound Onset to Identify T-Wave Offset
Agnese Sbröllini*, Marta Beghella Bartoli, Angela Agostinelli, Micaela Morettini, Francesco Di Nardo, Sandro Fioretti, Laura Burattini

P62 ECG Criteria and Signal Processing

Room: Rooms 1-4

86-353 Heartbeat Detection Using Oscillatory Envelope Pattern in Noisy Electrocardiogram

Hsiao-Lung Chan*, Yi-Sheng Lee, Chun-Li Wang

87-324 ECG-Based Predictors of Sudden Cardiac Death in Chagas' Disease

Alex Chaves Alberto*, Gabriel Azevedo Limeira, Roberto Coury Pedrosa, Vicente Zarzoso, Jurandir Nadal

88-7 Fine Tuning of the Dynamic Low-pass Filter for Electromyographic Noise Suppression in Electrocardiograms

Ivaylo Christov, Tatiana Neycheva, Ramun Schmid*

89-407 Robust Automatic Detection of P Wave and T Wave in Electrocardiogram

Dimitrios Zavantis, Ermioni Mastora, George Manis*

90-363 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

91-96 Beyond HRV: Analysis of ECG Signals using Attractor Reconstruction

Jane Lyle*, Philip Aston, Manasi Nandi, Esther Bonet-Luz

92-30 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

93-231 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

- 94-238** New Improved Methodology for ECG Signal Compression
Rupali Tornekar*, Suhas Gajre
- 95-236** "Comparative Study of Lossless ECG Signal Compression Techniques for Wireless Networks"
Rupali Tornekar*, Suhas Gajre
- 96-110** Attenuation of QRS Power in the Frequency Range from 0.05 to 1 kHz
Josef Halamek*, Pavel Leinveber, Filip Plesinger, Magdalena Matejkova, Pavel Jurak
- 97-365** A Robust Detection Method of Short Atrial Fibrillation Episodes
Zouhair Haddi*, Jean-François Pons, Stéphane Delliaux, Bouchra Ananou, Jean-Claude Deharo, Ahmed Charao, Rachid Bouchakour, Mustapha Ouladsine
- 98-282** Characterizing Electrocardiographic Changes During Pre-seizure Periods through Temporal and Spectral Features
Lucia Billeci, Maurizio Varanini*

P63 Ventricular Arrhythmias

Room: Rooms 1-4

- 99-274** Prediction of Ventricular Tachycardia Using Nonlinear Features of Heart Rate Variability and Artificial Neural Network Classifier
Nastaran Ehtiati, Gholamreza Attarodi*, Nader Jafarnia Dabanloo, Javid Farhadi Sedehi, Ali Moti Nasrabadi
- 100-253** Prediction of the Exit Site of Ventricular Tachycardia Based on Different ECG Lead Systems
Michał Kania*, Yves Coudière, Hubert Cochet, Michel Haossaguerre, Pierre Jaos, Mark Potse
- 101-51** Non Invasive Assessment of Spatiotemporal Organization of Ventricular Fibrillation through Principal Component Analysis
Marianna Meo*, Mark Potse, Stéphane Puyo, Laura Bear, Milóze Hocini, Michel Haossaguerre, Rumi Dubois
- 102-376** Computational Study of the Effect of KCNJ2 E299V Mutation on Ventricular Arrhythmogenesis and Electromechanics
Jiyeong Lee*, Yoo Seok Kim, Ki Moo Lim
- 103-255** Prediction of Ventricular Fibrillation from HRV Signals Using Combination of Genetic Algorithm and Neural Networks
Javid Farhadi Sedehi, Nader Jafarnia Dabanloo*, Gholamreza Attarodi, Mehdi Eslamizadeh
- 104-46** Effect of Different Ventricular Arrhythmia Origin on Cardiac Sound Variability using M-mode Signal Representation
Raül Ortiz-Puente*, Margarita Sanromán-Junquera, Sergio Mupoz-Romero, Mercedes Ortiz, Rebeca Goya-Esteban, Jose Luis Rojo-Alvarez, Jesús Almendral-Garrote

P64 Mapping & Miscellaneous Arrhythmias

Room: Rooms 1-4

- 105-291** Atrial Electro-anatomic Mapping with a Novel Noncontact Approach
Shu Meng*, Jichao Zhao, Nigel Lever, Gregory Sands, Laura Bear, Anne Gillis, Bruce Smaill
- 106-383** Dual-sided Mapping During Global Stretch Using a Custom Miniaturized Endocardial Balloon with a Multipurpose Multichannel Acquisition System for Preclinical Electrophysiological Studies
Conrado J. Calvo*, Alvaro Tormos, Eduardo Roses, Manuel Zarzoso, Antonio Cebrian, Santiago Jimenez, Elena Simarro, Jaime Yagóe, Jost Millet, Javier Chorro, Antonio Guill
- 107-456** A Single-sensor High-resolution Panoramic Optical Mapping Configuration for Simultaneous Non-overlapped Complete Atrial and Ventricular Parametric Imaging
Conrado J. Calvo*, Antonio Guill, Alvaro Tormos, Manuel Zarzoso, Luis Such-Miquel, Luis Such, Francisco Chorro, Jost Millet
- 108-431** A High Resolution Bi-atrial Optical Mapping System for the Analysis of Arrhythmia in the Hypertensive Heart
Girish Ramlugun*, Gregory Sands, Jichao Zhao, Ian LeGrice, Bruce Smaill
- 109-13** Doppler Based Algorithm for Reconstructing the Origin of the Drifting Rotor Due to Spatial Temperature Gradients
Guy Malki*, Sharon Zlochiver
- 110-367** Design and Presenting of a Novel Algorithm Using Anfis for New Generation of Cardiac Pacemakers
Asghar Dabiri Aghdam, Nader Jafarnia Dabanloo, Gholamreza Attarodi*, Mohammad Sattari, Nazanin Hemmati

- 111-48** Study on the Alternatives to Reduce High-Frequency Noise from Invasive Recordings of Atrial Fibrillation
Miguel Martvnez, Juan Rodenas, Raul Alcaraz, Josi J Rieta*
- 112-49** Application of the Stationary Wavelet Transform to Reduce Power-line Interference in Atrial Electrograms
Miguel Martvnez, Juan Rodenas, Raul Alcaraz, Josi J Rieta*
- 113-73** Open-loop Adaptive Filtering for Suppressing Chest Compression Oscillations in the Capnogram during Cardiopulmonary Resuscitation
Mikel Leturiondo*, Jesus Ruiz, J.J. Gutierrez, Luis A Leturiondo, Jose F Veintemillas, James K Russell, Mohamud Daya
- 114-476** AF Classification from a short single lead ECG recording using Deep Learning
Sonia Thomas*, Sael Lee
- 115-399** Heart Arrhythmia Classification Using Extracted Features in Poincare Plot of RR Intervals
Shahab Rezaei, Sadaf Moharrerri, Saman Parvaneh, Mostafa Abdollahpur*
- 116-440** Pathline Strategy for Reconstructing Coherent Conduction Velocity Maps During Arrhythmias
Ismael Hernandez-Romero*, Alejandro Liberos, Miguel Rodrigo, Carlos Figuera, Maria de la Salud Guillem Sanchez, Francisco Fernandez-Avilas, Angel Arenal, Felipe Atienza, Andreu M. Climent
- 117-143** Wavelet Based Algorithm for the Automatic Detection of Activations in Intracardiac Records in the Presence of Supraventricular Tachyarrhythmia
Jaime Yagoe-Mayans*, Francisco Castells, Javier Moreno, Josi Millet Roig, Raquel Cervigon
- 118-272** Atrial Fibrillation Analysis for Real Time Patient Monitoring
Ragheed Allami, Andrew Stranieri, Faezeh Marzbanrad*, Venki Balasubramanian, Herbert F Jelinek

P65**Atrial Modelling**

Room: Rooms 1-4

119-122A Spatially Extended Model of the Human
Atrioventricular Node

Mikael Wallman*, Frida Sandberg

120-218Pace-and-Drive of the Human Sinoatrial Node: a
Preliminary Computational Investigation

Alan Fabbri, Axel Loewe, Ronald Wilders, Stefano Severi*

121-219Effects of the Small Conductance Calcium-Activated
Potassium Current (I_{SK}) in Human Sinoatrial NodeAlan Fabbri, Michelangelo Paci*, Jari Hyttinen, Ronald Wilders,
Stefano Severi**122-310**In Silico Analysis of the Effects of Fibroblasts Coupling to
Atrial Myocytes under Conditions of Atrial Fibrillation
Remodeling

Jorge Sánchez, Beatriz Trenor*, Javier Saiz

123-37Lead and Carbon Monoxide Effects on Human Atrial
Action Potential. in Silico StudyCatalina Tobon*, Diana C Pachajoa, Juan P Ugarte, Andres
Orozco-Duque, Javier Saiz**124-26**Maximization of Left Atrial Information through the
Optimization of ECG Lead Systems

Axel Loewe*, Sebastian Debatin, Gustavo Lenis, Olaf Doessel

P66 Health Informatics & Technology

Room: Rooms 1-4

- 125-118** An Interactive Virtual Reality Environment for Analysis of Clinical Atrial Arrhythmias and Ablation Planning
Axel Loewe*, Emanuel Poremba, Tobias G. Oesterlein, Nicolas Pilia, Micha Pfeiffer, Olaf Doessel, Stefanie Speidel
- 126-382** CEPM: Web-based Education & Research Platform for Cardiac Electromechanics
Febrian Setianto*, Ki Moo Lim
- 127-94** A System for Electrocardiographic Studies in the Community
Rene Ivan Gonzalez-Fernandez*, Jorge Aquilera-Perez, Gisela Montes de Oca-Colina, Marisabel Lopez-Fernandez
- 128-68** An Optimized Drug Similarity Framework for Side-effect Prediction
Yi Zheng*, Shameek Ghosh, Jinyan Li
- 129-422** Characterization of Screen-printed Textile Electrodes Based on Conductive Polymer for ECG Acquisition
Andrea Achilli*, Danilo Pani, Annalisa Bonfiglio
- 130-461** Characterizing Dry Electrodes Impedance by Parametric Modeling for Arm Wearable Long-term Cardiac Rhythm Monitoring
Antonio Bosnjak, Pedro Linares, James McLaughlin, Omar Escalona*
- 131-71** Biomedical Signal Quality Assessment via Learning to Rank with an Application to Mechanical Heart Signals
Olli Lahdenoja, Mojtaba Jafari Tadi*, Matti Kaisti, Timo Knuutila, Mikko Pönkö, Tero Koivisto
- 132-90** A Database of Electrocardiogram Signals Acquired in Different Magnetic Resonance Imaging Scanners
Johannes Krug*, Marcus Schmidt, Georg Rose, Michael Friebe

- 133-142** Comparison of Compression Solutions for Impedance and Field Potential Signals of Cardiomyocytes
Pauline Guyot*, Levy Batista, El-Hadi Djermoune, Jean-Marie Moureaux, Leo Doerr, Matthias Beckler, Thierry Bastogne
- 134-299** Study of Similarity Measures for Case-Based Reasoning in Transcatheter Aortic Valve Implantation
HuÛne Feuill tre*, Vincent Auffret, Miguel Castro, Herv  Le Breton, Mireille Garreau, Pascal Haigron
- 135-113** Time-varying Acoustic Emission Characterization for Guidewire Coronary Artery Perforation Identification
Alfredo Illanes*, Anna Schaufler, Iv n Maldonado Zambrano, Axel Boese, Michael Friebe
- 136-450** 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
- 137-402** 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-Fran ois Migeotte, Andrea Faini, Gianfranco Parati, Enrico Caiani*
- 138-248** 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
- 139-206** Photoplethysmography-based Noninvasive and Continuous Blood Pressure Estimation by Artificial Neural Network
Tsai- weng Shih*, Hung-Wen Chiu
- 140-293** A Practical Noise Stress Test to Assess Performance of Automated Photo-plethysmogram Analysis
Reza Firoozabadi*, Saeed Babaeizadeh

- 141-408** Correlations of First and Second Heart Sounds with Age, Sex, and BMI
Bjarke Skogstad Larsen*, Simon Winther, Morten Bϕttcher, Johannes Struijk, Samuel Emil Schmidt
- 142-139** Imaging Photoplethysmography: a Real-time Signal Quality Index
Sibylle Fallet*, Yann Schoenenberger, Lionel Martin, Fabian Braun, Virginie Moser, Jean-Marc Vesin
- 143-140** Wearable Pressure Sensor Array for Health Monitoring
Matti Kaisti*, Joni Leppϕnen, Olli Lahdenoja, Pekka Kostiainen, Mikko Pϕnkϕlϕ, Ulf Meriheinϕ, Tero Koivisto

P67 Modelling Therapy

Room: Rooms 1-4

144-283 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 Rochette, Pascal Haigron, Stuphane Avril, Hervé Le Breton

145-400 Computer Modeling of Irrigated-tip Electrodes During RF Cardiac Ablation: Comparative Analysis between Including and Excluding the Problem of Fluid Dynamics
Ana Gonzalez-Suarez*, Juan J. Perez, Enrique Berjano

146-273 Dual Extruder 3D-Bioprinter for Computer Designed Cardiac Structures
Ana Maria Sanchez de la Nava*, Alejandro Liberos, Ismael Hernandez-Romero, Marva Eugenia Fernandez-Santos, Felipe Atienza, Andreu M. Climent, Francisco Fernandez-Aviles

P68 Heart Rate Variability in Applications

Room: Rooms 1-4

- 147-470** 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
- 148-302** Nonlinear Heart Rate Variability Measures During the Oral Glucose Tolerance Test
Gilberto Perpignan, Erika Severein, Sara Wong*, Miguel Altuve
- 149-339** Analysis of Heart Rate Variability Indices after Selective Acute Atrial Ischemia in Humans
Pedro Gomis*, Jesús Alvarez-García, Pere Caminal, Juan Cinca
- 150-161** 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*
- 151-256** Nonlinear Effects of Winter Swimming and Sauna Recreational Activities on the Heart Rate Variability
Ilya Potapov*, Samuli Haverinen, Jari Viik, Esa Rõsõnen
- 152-183** Analysis in Cardiac Stability over Thirty Minute Periods
Masaki Hoshiyama*, Alan Murray
- 153-420** 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*
- 154-409** A Universal Method to Control Over-time Alterations of Respiratory Sinus Arrhythmia in Short and Long Signals
Iga Grzegorzczak*, Jan Gierałtowski, Paweł Krzesiński, Jan Żebrowski

- 155-221** The Phenomenon of Synchronization between Cardiac, Respiratory and Locomotor Rhythms
Judyta Salamon*, Teodor Buchner
- 156-368** Influence of Snack Intake on Cardiac Autonomic Nervous System in Patients with Type 2 Diabetes
Saman Parvaneh*, Amir Abdolahi, Mehrnoosh Arafati, Faezeh Naderi
- 157-167** Instantaneous Assessment of Hedonic Olfactory Perception Using Heartbeat Nonlinear Dynamics: a Preliminary Study
Alberto Greco, Mimma Nardelli, Antonio Lanata, Maria Sole Morelli, Fabio Di Francesco, Enzo Pasquale Scilingo, Riccardo Barbieri, Gaetano Valenza*
- 158-398** Diagnosis of Sleep Apnea by Evaluating Points Distribution in Poincare Plot of RR Intervals
Shahab Rezaei, Sadaf Moharreri, Saman Parvaneh, Shadi Ghiasi*

P69 Challenge Posters I

Room: Rooms 1-4

- 159-327** Complexity Measurements of Cardiac Rhythms for the Detection of Atrial Fibrillation
Shadi Ghiasi*, Mostafa Abdollahpur, nasimalsadat madani, Ali Ghaffari
- 160-246** Atrial Fibrillation Classification Using Signal Quality Index and Convolutional Neural Networks
Saman Parvaneh*, Jonathan Rubin, Rahman Asif, Bryan Conroy, Saeed Babaeizadeh
- 161-460** Cardiac Arrhythmia Detection from ECG Combining Convolutional and Long Short-Term Memory Networks
Philip Warrick*, Masun Nabhan Homs
- 162-294** Combining Multi-source Features and Support Vector Machine for Heart Rhythm Classification
Chengyu Liu*, Qiao Li, Pradyumna B Suresha, Gari Clifford
- 163-226** Atrial Fibrillation Detection Using Convolutional Neural Networks and Dictionaries
Sandeep Chandra Bollepalli*, S Sastry Challa, Soumya Jana
- 164-301** Robust Feature Extraction from Noisy ECG for Atrial Fibrillation Detection
Octavian Lucian Hasna*, Rodica Potolea
- 165-56** Rhythm and Quality Classification from Short ECGs Recorded using a Mobile Device
Joachim A. Behar*, Aviv Rosenberg, Yael Yaniv, Julien Oster
- 166-54** Arrhythmia Classification from the Abductive Interpretation of Short Single-lead ECG Records
Tomas Teijeiro*, Constantino A. Garcia, Paulo Flix
- 167-129** End-to-end Recognition of Atrial Fibrillation in EKG with Deep Convolutional Neural Networks
Awni Hannun*, Sudnya Diamos, Pranav Rajpurkar

- 168-163** Fusing QRS Detection and Robust Interval Estimation with a Random Forest to Classify Atrial Fibrillation
Christoph Hoog Antink*, Steffen Leonhardt, Marian Walter
- 169-168** ECG Classification Based on Time and Frequency Domain Features Using Random Forests
Martin Kropf*, Dieter Hayn, G nter Schreier
- 170-313** Detection of Atrial Fibrillation Episodes from Short Single Lead Recordings by Means of Ensemble Learning
Pietro Bonizzi, Kurt Driessens, Joel Karel*
- 171-101** Spectral and Temporal Variability Analysis and Classification for Atrial Fibrillation and Other Arrhythmias, using Quadratic SVM Classifier
Vadim Gliner*, Yael Yaniv
- 172-325** AF Detection and ECG Classification based on Long-Short Term Memory Neural Networks
Mohamed Limam*, Frederic Precioso
- 173-200** SVM Based ECG Classification Using Rhythm and Morphology Features, Cluster Analysis and Multilevel Noise Estimation
Radovan Smv sek, Jakub Hej , Marina Ronzhina, Andrea N mcov , Lucie Mar  anov , Jiřv Chmelvk, Jana Kol  rov , Ivo Provaznkv, Luk    Smital, Martin Vvtek*
- 174-154** A Robust AF Classifier using Time and Frequency Features from Single Lead ECG Signal
Shreyasi Datta*, Chetanya Puri, Ayan Mukherjee, Rohan Banerjee, Anirban Dutta Choudhury, Arijit Ukil, Soma Bandyopadhyay, Arpan Pal, Sundeep Khandelwal
- 175-192** AF Classification from ECG Recording Using Feature Ensemble and Sparse Coding
Bradley Whitaker*, Muhammed Rizwan, Burak Aydemir, David Anderson
- 176-21** Multi-parametric Analysis for Atrial Fibrillation Classification in the ECG
Ivaylo Christov, Vessela Krasteva*, Iana Simova, Tatyana Neycheva, Ramun Schmid

- 177-132** Classification of Atrial Fibrillation Using Convolutional Neural Network Trained with Semi-Supervised Learning
Dylan Richards*, Kevin Rose, Matt Pipke
- 178-237** Single Lead ECG Classification of Atrial Fibrillation and Other Rhythms Using Statistical and Morphological Features with Bagging
Mohammed Baydoun*, Lise Safatly, Hassan Ghaziri, Ali El-Hajj
- 179-245** ENCASE: an ENsemble CIASSifiEr for ECG Classification Using Expert Features and Deep Neural Networks
Shenda Hong*, Meng Wu, Yuxi Zhou, Qingyun Wang, Junyuan Shang, Hongyan Li, Junqing Xie
- 180-403** Cardiac Rhythm Classification from a Short Single Lead ECG Recording via Random Forests
Ruhi Mahajan, Rishikesan Kamaleswaran, Oguz Akbilgic*
- 181-102** Diagnosis of AF Based on Time and Frequency Features by using a Hierarchical Classifier
Yang Liu*, Kuanquan Wang, Qince Li, Runnan He, Yong Xia, Henggui Zhang
- 182-145** Discontinuous Conduction through the Heterogeneous Purkinje-Ventricular Junction under the Short QT Syndrome Variant 3
Cunjin Luo, Kuanquan Wang, Henggui Zhang, Yang Liu*, Yong Xia

P6A**Previous Challenges**

Room: Rooms 1-4

183-178

Noise Resistance of Several Top-Scored Heart Beat Detectors

Marcus Vollmer*

184-281

A Data-Driven Feature Extraction Method for Enhanced Phonocardiogram Segmentation

Francesco Renna*, Jorge Oliveira, Miguel Coimbra

185-330

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

Shadi Ghiasi, Mostafa Abdollahpur*, Ali Ghaffari

186-377

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

Erdem Yanar*, Yesim Serinagaoglu Dogrusoz

187-373

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

Ali Asghar Zarrabi Rad, Nader Jafarnia Dabanloo*, Gholamreza Attarodi, Keivan Maghooli

S71

Imaging Cardiac Motion

Chairs: Soo Kng Teo and Claudio Lamberti

Room: Room 102

188-19

3D Echocardiographic Optimization of Residual Native Myocardial Function in Patients with Left Ventricular Assist Devices

14:45-15:00

Diego Medvedofsky, Roberto Lang, Gabriel Sayer, Karima Addetia, Eric Kruse, Sirtaz Adatya, Gene Kim, Lynn Weinert, Megan Yamat, Nir Uriel, Victor Mor-Avi*

189-244

Realistic Ground Truth Sequences for Speckle Tracking Algorithms

15:00-15:15

Martino Alessandrini*, Brecht Heyde, Jan D'hooge

190-27

Evaluation the Myocardial Motion at Scar Locations using 4D MDCT Cardiac Images

15:15-15:30

Weichih Hu*, Hsuan-Ming Tsao

191-146

Comparison of Left Ventricular Curvedness Derived from CMR Imaging with the Wall Motion Score Index for Male Patients after First-time Myocardial Infarction

15:30-15:45

Soo Kng Teo*, Xiao Dan Zhao, Ru San Tan, Liang Zhong, Yi Su

192-279

The Differential Meaning of LV and LA Strains in Aortic Valve Stenosis: a Feature Tracking MRI Study

15:45-16:00

Jr̃tme LAMY*, Gilles Soulat, Morgane Evin, Khaoula Bouazizi-Verdier, Alain Giron, Alban Redheuil, Elie Mousseaux, Nadjia Kachenoura

S72

Invasive Recordings and Atrial Fibrillation

Chairs: Marianna Meo and Matthijs Cluitmans

Room: Amphi L

193-32

Comparative Study of Methods for Atrial Fibrillation
Cycle Length Estimation in Fractionated Electrograms

14:45-15:00

Diego I Osorio*, Raul Alcaraz, Josu J Rieta

194-415

Phase Analysis of Endoatrial Electrograms for 3D Rotor
Detection in Atrial Fibrillation

15:00-15:15

Maddalena Valinoti*, Francesca Berto, Martino Alessandrini,
Roberto Mantovan, Axel Loewe, Olaf Doessel, Stefano Severi,
Cristiana Corsi

195-344

Persistent Atrial Fibrillation Hierarchical Activation: from
Highest DF Sites to Wave Fractionation at the
Boundaries

15:15-15:30

Joyo Salinet*, Fernando Schlindwein, Peter Stafford, Tiago
Almeida, Xin Li, Frederique Vanheusden, Maria de la Salud
Guillem Sanchez, G. Andre Ng

196-69

Spurious Rotor Detection during Atrial Fibrillation: Phase
Singularities in Fact Reflect Blurred Conduction Block

15:30-15:45

Stef Zeemering*, Piotr Podziemski, Pawel Kuklik, Arne van
Hunnik, Bart Maesen, Ulrich Schotten

197-321

Deterministic Structures in Fractionated Atrial
Electrograms During Human Persistent Atrial Fibrillation

15:45-16:00

Tiago Almeida*, Fernando Schlindwein, Joyo Salinet, Xin Li,
Gavin Chu, Jiun Tuan, Peter Stafford, G. Andre Ng, Diogo
Soriano

198-427

Level-set Method for Analysis of Optical Mapping
Recordings of Atrial Fibrillation

16:00-16:15

Daniel Gurevich*, Conner Herndon, Ilija Uzelac, Flavio Fenton,
Roman Grigoriev

S73 ECG/EG-based Analysis

Chairs: Valentina Corino and Julien Oster

Room: Amphi M

199-213 A Group LASSO Based Method for Automatic Physiological Rhythm Analysis

14:45-15:00 Rebeca Goya-Esteban*, Sscar Barquero-Pirez, Carlos Figuera, Arcadi Garcva-Alberola, Jose Luis Rojo-Alvarez

200-418 Effect of Extracellular Calcium Concentration on Controlling Cardiac Alternans

15:00-15:15 Shiuan-Ni Liang*, Pik-Yin Lai

201-124 Beyond HRV: Attractor Reconstruction for Early Detection of Sepsis and Changes in Contractility

15:15-15:30 Philip Aston*, Manasi Nandi, Mark Christie

202-136 A Predictive Patient Specific Model for the Human Atrium

15:30-15:45 Cesare Corrado, Steven Williams, Gernot Plank, Mark O'Neill, Steven Niederer*

203-31 A Fractionation-based Local Activation Wave Detector for Atrial Electrograms of Atrial Fibrillation

15:45-16:00 Diego I Osorio*, Raul Alcaraz, Jost J Rieta

S74 Heart Rate Variability

Chairs: Raquel Bailon and Virginie Le Rolle

Room: Room 103

204-166 Impact of Nonstationarities on Short Heart Rate Variability Recordings During Obstructive Sleep Apnea

14:45-15:00 Vlasta Bari*, Luca Faes, Davide Tonon, Beatrice De Maria, Giovanni Ranuzzi, Gianluca Rossato, Alberto Porta

205-288 Time-frequency Analysis of the Autonomic Response to Head-up Tilt Testing in Brugada Syndrome

15:00-15:15 Mireia Calvo*, Virginie Le Rolle, Daniel Romero, Nathalie Bihar, Pedro Gomis, Philippe Mabo, Alfredo Hernandez

206-286 Robust Pulse Rate Variability Analysis from Reflection and Transmission Photoplethysmographic Signals

15:15-15:30 Elena Peralta*, Jesus Lazaro, Eduardo Gil, Raquel Bailon, Vaidotas Marozas

207-225 Comparison of Heart Rate Variability Assessment During Exercise from Polar RS800 and ECG

15:30-15:45 David Hernando*, Nuria Garatachea, Jose Antonio Casajls, Raquel Bailon

208-155 Effects of Pharmacological Compounds on Fractal Beat Rate Variability of Human Induced Pluripotent Stem Cell-Derived Cardiomyocytes

15:45-16:00 Jiyeong Kim*, Jukka Kuusela, Katriina Aalto-Setälä, Esa Räsänen

209-214 Analysis of Heart Rate Variability Influence on Heart Rate Turbulence Using Boosted Regression Trees in Heart Failure Patients

16:00-16:15 Zscar Barquero-Perez*, Sandra Cantero, Rebeca Goya-Esteban, Carlos Figuera, Arcadi Garcia-Alberoa, Jose Luis Rojo-Alvarez

S75 Arrhythmias & Signal Processing

Chairs: Daniel Guldenring and Riccardo Barbieri

Room: Amphi N

210-269 Evaluating the Risks of Arrhythmia through Big Data: Automatic Processing and Neural Networks to Classify Epicardial Electrograms

14:45-15:00 Carlos Ledezma*, Benjamin Kappler, Veronique Meijborg, Bas Boukens, Marco Stijnen, PJ Tan, Vanessa Diaz-Zuccarini

211-84 Atrial Fibrillation Detection using Stationary Wavelet Transform and Deep Learning

15:00-15:15 Yong Xia*, Naren Wulan, Kuanquan Wang, Henggui Zhang

212-260 Morphology Based Detection of Premature Ventricular Contractions

15:15-15:30 Rohit Hadia*, Daniel Guldenring, Dewar Finlay, Alan Kennedy, Ghalib Janjua, Raymond Bond, James McLaughlin

213-82 Computational Evaluation of Radiofrequency Catheter Ablation Settings for Variable Atrial Tissue Depth and Blood Flow Conditions

15:30-15:45 Desmond Dillon-Murphy, David Nordsletten, Navjeevan Soor, Henry Chubb, Mark O'Neill, Adelaide de Vecchi, Oleg Aslanidi*

214-185 Arrhythmia Classification in Long-Term Data Using Relative RR Intervals

15:45-16:00 Marcus Vollmer*

215-182 A 4 Lead Real Time Arrhythmia Analysis Algorithm

16:00-16:15 Jianwei Su, Jian Dai, Zehong Guan, Zehui SUN, Wenyu Ye, Cadathur Rajagopalan*

S81

Cardiovascular Mechanics

Chairs: Kouhyar Tavakolian and Dingchang Zheng

Room: Room 102

216-232

The Influence of Right Ventricular Afterload in Cardiac Resynchronization Therapy: a CircAdapt Study

16:30-16:45 Clemens Zeile*, Alexander Schmeisser, Thomas Rauwolf, Tobias Weber, Sebastian Sager

217-356

Model-based estimation of internal heart power in aortic valve disease patients.

16:45-17:00 Matthias Gsell*, Gernot Plank

218-421

Activation Dispersion: a New Method to Visualize and Quantify Ventricular Dyssynchrony

17:00-17:15 Jacob Melgaard*, Johannes Struijk, Jørgen K Kanthers, Peter L Sørensen, Claus Graff

219-385

Novel Non-invasive Pressure-volume Loop Measurement for Local Pulse-wave Velocity Estimation

17:15-17:30 Ghalib Muhammad Waqas Janjua*, Dewar Finlay, Daniel Guldenring, Rohit Hadia, James McLaughlin

220-36

Non-invasive Technique for Determining Local PWV in the Human Ascending Aorta

17:30-17:45 Madalina Negoita*, Alun D Hughes, Kim H Parker, Ashraf W Khir

S82

Repolarization

Chairs: Michele Orini and Juan Pablo Martinez

Room: Amphi L

221-85

T-Wave Alternans Identification in Direct Fetal
Electrocardiography

16:30-16:45 Ilaria Marcantoni, Marica Vagni, Angela Agostinelli*, Agnese
Sbrollini, Micaela Morettini, Luca Burattini, Francesco Di
Nardo, Sandro Fioretti, Laura Burattini

222-241

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

16:45-17:00 Michele Orini*, Stefan van Duijvenboden, Neil Srinivasan,
Malcolm Finlay, Peter Taggart, Pier Lambiase

223-9

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

17:00-17:15 Julia Ramvrez*, Michele Orini, Esther Pueyo, Pablo Laguna

224-107

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

17:15-17:30 Valentina Corino*, Roberto Sassi, Luca Mainardi, Massimo
Rivolta

225-392

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

17:30-17:45 Daniel Guldenring*, Dewar D Finlay, Alan Kennedy, Raymond R
Bond, James McLaughlin

226-267

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

17:45-18:00 Julia Ramvrez*, Michele Orini, Esther Pueyo, Pablo Laguna

S83 Heart and Thorax Modelling

Chairs: Mark Potse and Alan Murray

Room: Amphi M

227-58 Statistical Variations of Heart Orientation in Healthy Adults

16:30-16:45 Freddy Odille*, Shufang Liu, Peter van Dam, Jacques Felblinger

228-202 Solving Inaccuracies in the Heart Position and Orientation for Inverse Solution by Using Electrical Information

16:45-17:00 Miguel Rodrigo*, Andreu M. Climent, Alejandro Liberos, Ismael Hernandez-Romero, Angel Arenal, Javier Bermejo, Francisco Fernandez-Aviles, Felipe Atienza, Maria de la Salud Guillem Sanchez

229-432 Role of Myocardial Properties and Pacing Lead Location on ECG in Personalized Paced Heart Models

17:00-17:15 Konstantin Ushenin*, Arseniy Dokuchaev, Sonya Magomedova, Oleg Sopov, Vitaly Kalinin, Olga Solovyova

230-397 Investigating the Dependency of the QRS Complex with the MRI-based Heart/torso Geometries Using Personalised Computer Models

17:15-17:30 Ana Minchale*, Ernesto Zacur, Aurore Lyon, Rina Ariga, Valentina Carapella, Benjamin Villard, Hector Martinez-Navarro, Alfonso Bueno-Orovio, Vicente Grau, Blanca Rodriguez

231-112 Patient-specific Parameterization of Left-ventricular Model of Cardiac Electrophysiology using Electrocardiographic Recordings

17:30-17:45 Karli Gillette*, Anton Prassl, Jason Bayer, Edward Vigmond, Aurel Neic, Gernot Plank

232-449 A New, Low-Energy Defibrillation Strategy: Use of Multiple Electric Field Directions to Reshape Scroll Wave Filaments

17:45-18:00 Kayleigh Wheeler, Niels Otani*

S84

Sleep Apnea

Chairs: Alfredo Hernandez and Carolina Varon

Room: Room 103

233-447

Apneas, Chronic Intermittent Hypoxia and Heart Rate Rhythm: Physiology and Exploration (Clinical Talk)

16:30-17:00 Trang Nguyen Phuc Thu, Guy Carrault, Patrick Pladys, Alfredo Hernandez, Alain Beuchle*

234-224

Assessing Cardiovascular Comorbidities in Sleep Apnea Patients Using SpO2

17:00-17:15 Margot Deviaene*, Carolina Varon, Dries Testelmans, Bertien Buyse, Sabine Van Huffel

235-188

Sleep Questionnaires in Screening for Obstructive Sleep Apnea

17:15-17:30 Joachim A. Behar*, Niclas Palmius, Jonathan Daly, Qiao Li, Fabiola Rizzatti, Lia Bittencourt, Gari D. Clifford

236-39

Instantaneous Time Course of Autonomic-Cardiovascular Response to Short-Term Hypoxia in Healthy Subjects: a Time-Frequency Analysis Approach

17:30-17:45 Salvador Carrasco-Sosa, Alejandra Guillun-Mandujano*

237-86

Overnight T-Wave Alternans in Sleep Apnea Patients

17:45-18:00 Laura Burattini*, Ilaria Ciotti, Michela D'Ignazio, Alessandro Miccoli, Angela Agostinelli, Agnese Sbrollini, Micaela Morettini, Francesco Di Nardo, Sandro Fioretti

S85

ECG Analysis

Chairs: Luca Mainardi and Fabienne Porée

Room: Amphi N

238-33

Electrocardiographic P-wave Delineation Based on Adaptive Slope Gaussian Detection

16:30-16:45 Francisco González*, Raul Alcaraz, Josu J Rieta

239-179

ATHrIA: a New Adaptive Threshold Identification Algorithm for Electrocardiographic P Waves

16:45-17:00 Agnese Sbröllini*, Sofia Mercanti, Angela Agostinelli, Micaela Morettini, Francesco Di Nardo, Sandro Fioretti, Laura Burattini

240-354

Modeling Cardiovascular Condition Evolution in Hypertensive Population Using Graph Signal Processing

17:00-17:15 Antonio G. Marques*, Cristina Soguero-Ruiz, Javier Ramos, Inmaculada Mora-Jimenez, Rebeca Goya-Esteban, Rafael Garcia-Carretero, Escar Barquero-Perez

241-123

Quantification of hERG Block from the ECG

17:15-17:30 Brian Chiu*, Johan de Bie, David Mortara, Cristiana Corsi, Stefano Severi

242-159

ECG Artefact Detection Using Ensemble Decision Trees

17:30-17:45 Jonathan Moeyersons*, Carolina Varon, Dries Testelmans, Bertien Buyse, Sabine Van Huffel

243-3

Model-Based Delineation of Non-Equidistant ECG

17:45-18:00 Thomas Niederhauser*, Andreas Haeberlin, Barbara Jesacher, Andreas Fischer, Hildegard Tanner

S91

ECG Imaging III

Chairs: Maria Guillem and Rémi Dubois

Room: Amphi L

244-277

Spatial Distribution and Orientation of a Single Moving Dipole Computed in 12-Lead ECGs in a Healthy Population Using a Spherically Bounded Model

8:30-8:45

Vito Starc*, Cees A. Swenne

245-189

Influence of Body-Surface Geometry Accuracy on Noninvasive Reconstruction of Electrical Activation and Recovery in Electrocardiographic Imaging

8:45-9:00

Matthijs Cluitmans*, Paul Volders

246-40

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

9:00-9:15

Peter Johnston*

247-303

ECG Imaging of Simulated Atrial Fibrillation: Imposing Epi-Endocardial Similarity Facilitates the Reconstruction of Transmembrane Voltages

9:15-9:30

Steffen Schuler*, Danila Potyagaylo, Olaf Doessel

248-215

Including a Priori Knowledge in the Solution of the Inverse Problem During Atrial Fibrillation

9:30-9:45

Victor Suarez-Gutiérrez, Miguel Angel Cámara, Escar Barquero-Pérez*, Ismael Hernández-Romero, María de la Salud Guillem Sánchez, Andreu M. Climent, Felipe Alonso-Atienza, Carlos Figuera

S92

Cardiac Mechanics & Heart Failure

Chairs: Vincent Jacquemet and Axel Loewe

Room: Amphi M

249-198

The Effect of Mitochondria in Intracellular Calcium Dynamics in Cardiomyocytes: a Simulation Study

8:30-8:45

Ainhoa Asensio*, Jose M Ferrero

250-74

Ionic Modulation of Calcium Dynamics in Simulated Human Heart Failure

8:45-9:00

Maria Teresa Mora*, Jose M Ferrero, Beatriz Trenor

251-270

The Role of the Ina-Ik1 Complex on Human Ventricular Conduction Velocity

9:00-9:15

Peter Marinov*, Alfonso Bueno-Orovio, Blanca Rodriguez

252-453

Differential Responses to Beta-Adrenergic Stimulation in the Long QT Syndrome Type 1: Characterization and Mechanisms

9:15-9:30

David Adolfo Sampedro Puente*, Jesus Fernandez-Bes, Esther Pueyo

253-262

Investigation of the Presence and Mechanisms of Action Potential Alternans in Hypertrophic Cardiomyopathy

9:30-9:45

Aurore Lyon*, Ana Mincholl, Elisa Passini, Blanca Rodriguez

254-434

Calibration of the Passive Behavior of the Left Ventricle for Mechanical Heart Simulations

9:45-10:00

Lukas Baron*, Axel Loewe, Olaf Doessel

S93**Databases & Algorithm Development**

Chairs: Dewar Finlay and John Wang

Room: Amphi N

255-209L1 Penalized Cox Regression to Characterize
Cardiovascular Events in Hypertensive Patients

8:30-8:45

Rafael Garcva-Carretero, Éscar Barquero-Pirez*, Inmaculada
Mora-Jiminez, Cristina Soguero-Ruiz, Rebeca Goya-Esteban,
Antonio G. Marques, Javier Ramos**256-164**Towards Heart Sound Classification without
Segmentation using Convolutional Neural Network

8:45-9:00

Wenjie Zhang*, Jiqing Han

257-156The Physionet QT Database: Study on the Reliability of
P-wave Manual Annotations under Noisy Recordings

9:00-9:15

Francisco Gonzalez*, Raul Alcaraz, Josè J Rieta

258-64A Review of Basic Statistical Concepts used in Clinical
Test Interpretation and Decision Support

9:15-9:30

John Wang*

259-52Semi-Supervised One-Class Transfer Learning for Heart
Rate Based Epileptic Seizure Detection

9:30-9:45

Thomas De Cooman*, Carolina Varon, Anouk Van de Vel,
Berten Ceulemans, Lieven Lagae, Sabine Van Huffel**260-195**Semantic Biomarker Selection for Functional Genomics
of Heart Failure Model Organisms

9:45-10:00

Ludwig Lausser*, Steffen Just, Wolfgang Rottbauer, Hans
Kestler

S94 Heart Rate Analysis

Chairs: Jean-Marc Vesin and Alejandra Mandujano

Room: Room 102

261-372 The Periodic Repolarization Dynamics Index Identifies Changes in Ventricular Repolarization Oscillations Associated with Music-Induced Emotions

8:30-8:45 Giuiano Cerruto*, Luca Mainardi, Srefan Koelsch, Michele Orini

262-475 Altered Central Cardiovascular Network Pattern in Neuropathological Disease – Application of the Three Dimensional High Resolution Joint Symbolic Dynamics

8:45-9:00 Steffen Schulz, Minia Ricoy Castro, Beatriz Giraldo, Jens Haueisen, Karl-Juergen Baer, Andreas Voss*

263-411 Inspiration and Expiration Dynamics in Acute Emotional Stress Assessment

9:00-9:15 Javier Milagro*, Eduardo Gil, Jorge Mario Garzón Rey, Jordi Aguiló, Raquel Bailón

264-444 Intrapartum Fetal-State Classification Using Long Short-Term Memory Neural Networks

9:15-9:30 Philip Warrick*, Emily Hamilton

265-38 Types of Interference Effects on the Autonomic-Cardiovascular Response to the Simultaneous Performance of Active Orthostatic and Cold Face Tests

9:30-9:45 Salvador Carrasco-Sosa, Alejandra Guillón-Mandujano*, Aldo R. Mejía-Rodríguez

266-160 Removal of Respiratory Influences from Heart Rate During Emotional Stress

9:45-10:00 Carolina Varón*, Jesús Lázaro, Alberto Hernando Sanz, Alexander Caicedo, Sabine Van Huffel, Raquel Bailón

SA1 ECG in Exercise and Ischemia

Chairs: Jean-Philippe Couderc and Johan DeBie

Room: Amphi L

267-80 ECG as a Tool to Estimate Potassium and Calcium Concentrations in the Extracellular Space

10:15-10:30 Nicolas Pilia*, Olaf Doessel, Gustavo Lenis, Axel Loewe

268-133 The STAFF III Database: ECGs Recorded During Acutely Induced Myocardial Ischemia

10:30-10:45 Juan Pablo Martvnez*, Olle Pahlm, Michael Ringborn, Stafford Warren, Pablo Laguna, Leif Sornmo

269-258 QRS Fragmentation Index as a New Discriminator for Early Diagnosis of Heart Diseases

10:45-11:00 Francisco-Manuel Melgarejo-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

270-24 Using Generalised Polynomial Chaos to Examine Various Parameters in a Half-ellipsoidal Ventricular Model of Partial Thickness Ischaemia

11:00-11:15 Barbara Johnston*, Peter Johnston

271-417 Detecting Ischemic Stress to the Myocardium Using Laplacian Eigenmaps and Changes to Conduction Velocity

11:15-11:30 Wilson Good*, Burak Erem, Jaume Coll-Font, Dana Brooks, Rob MacLeod

SA2 Photoplethysmography & Sensor Technology

Chairs: Eliazs Kantoch and Alan Kennedy

Room: Room 102

272-35 A Two Step Gaussian Modelling to Assess PPG Morphological Variability Induced by Psychological Stress

10:15-10:30 Swati Banerjee*, Raquel Bailon, Jesus Lazaro, Vaidotas Marozas, Pablo Laguna, Eduardo Gil

273-329 Detecting Episodes of Brady- and Tachycardia Using Photo-plethysmography at the Wrist in Free-living Conditions

10:30-10:45 Alberto Bonomi, Linda M. Eeriköinen*, Fons Schipper, Ronald Aarts, Helma de Morree, Lukas Dekker

274-135 Impact of Mixed Media on Transfer Functions with a Pacemaker System for Estimation of RF Heating During MRI Scans

10:45-11:00 Xiaoyi Min*, Shiloh Sison

275-229 Pulse Photoplethysmography Derived Respiration for Obstructive Sleep Apnea Detection

11:00-11:15 Jesus Lazaro*, Eduardo Gil, Margot Deviaene, Raquel Bailon, Dries Testelmans, Bertien Buyse, Carolina Varon, Sabine Van Huffel

276-197 Sleep Analysis Based on Inter-Beat-Interval Obtained from Photoplethysmogram

11:15-11:30 Shuli Eyal*, Anda Baharav

277-455 The Electrical Properties of Screen-Printed Ag/AgCl for ECG Monitoring

11:30-11:45 Alan Kennedy*, Dewar Finlay, Daniel Guldenring, Matthew Cutcliffe, Micheal Skillen, James McLaughlin

SA3 Cardiovascular Responses

Chairs: Willem Dassen and Ivo Provaznik

Room: Amphi M

278-152 Progressive Fetal Distress Estimation by Characterization of Fetal Heart Rate Decelerations Response Based on Signal Variability in Cardiotocographic Recordings.

10:15-10:30 Patricio Fuentealba*, Alfredo Illanes, Frank Ortmeier

279-165 Stratifying the Risk of Developing Atrial Fibrillation after Coronary Artery Bypass Graft Surgery Using Heart Rate Asymmetry Indexes

10:30-10:45 Giovanni Ranuzzi*, Vlasta Bari, Beatrice De Maria, Valeria Pistuddi, Marco Ranucci, Alberto Porta

280-454 Pulse Arrival Time Accurately Detects Pacing-Induced Mechanical Alternans

10:45-11:00 Stefan van Duijvenboden*, Nick Child, Ben Hanson, Jaswinder Gill, Peter Taggart, Michele Orini

281-341 Influence of U-shape Accelerations of Heart Rate on Very Low Frequency Band and Heart Rate Multifractality

11:00-11:15 Mateusz Soliński*, Jan Gierałtowski, Jan Żebrowski, Paweł Kuklik

282-141 Significant Physiological Features to Identify High Performance States

11:15-11:30 Marva Dolores Pelaez Coca*, Marva Teresa Lozano Albalade, Montserrat Aiger, Alberto Hernando, Eduardo Gil

283-333 Autonomic Nervous System Non-stationary Response to Hyperbaric Environments

11:30-11:45 Carlos Sánchez*, Marva Dolores Pelaez Coca, Marva Teresa Lozano Albalade, Alberto Hernando, Montserrat Aiger, Eduardo Gil

SA4 Noninvasive Characterization of Atrial Fibrillation

Chairs: Olivier Meste and José Millet Roig

Room: Amphi N

284-473 Targeted Cardio-respiratory Rhythms Monitoring Used as Decision Support System in Neonatology (Clinical Talk)

10:15-10:45 Patrick Pladys*, Guy Carrault, Alfredo Hernandez, Alain Beuchie

285-242 Noninvasive Characterization of Short- and Long-Term Recurrence of Atrial Signals During Persistent Atrial Fibrillation

10:45-11:00 Pietro Bonizzi*, Stef Zeemering, Joël Karel, Muhammad Haziq Kamarul Azman, Theo Lankveld, Ulrich Schotten, Harry Crijns, Ralf Peeters, Olivier Meste

286-91 P-wave Analysis in Paroxysmal Atrial Fibrillation Patients before and after Pulmonary Vein Isolation

11:00-11:15 Nuria Ortigosa*, Sscar Cano

287-191 A Patient-Specific Methodology for Prediction of Paroxysmal Atrial Fibrillation Onset

11:15-11:30 Elisabetta De Giovanni*, Amir Aminifar, Adrian Luca, Sasan Yazdani, Jean-Marc Vesin, David Atienza

288-87 Preliminary Results from Clinical Validation Study of a Method for Non-Invasive Assessment of Atrioventricular Node Refractoriness During Atrial Fibrillation

11:30-11:45 Frida Sandberg*, Valentina Corino, Leif Sornmo, Pyotr Platonov, Fredrik Holmqvist

Wednesday, September 27, 2017

12:00

PB1 Cardiovascular Imaging

Room: Rooms 1-4

- 289-148** 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
- 290-285** Lumen Border Segmentation at Intravascular Ultrasound Images Using Fuzzy Compound Approach
Mehdi Eslamizadeh, Gholamreza Attarodi*, Nader Jafarnia Dabanloo, Javid Farhadi Sedehi, Seyed Kamaledin Setarehdan
- 291-319** Intravascular OCT Artifact Removal by Means of Clustering/Markov Model
Shahrzad Shariati, Arash Taki*, Ali Pourmodheji

PB2 Cardiovascular Mechanics

Room: Rooms 1-4

- 292-106** 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
- 293-130** Experimental Method for Registering Epicardium Potentials and Myocyte Shortening
Gustavo Shimabukuro Marchini*, Daniel Seiei Uehara Tamashiro, Ismar Newton Cestari, Idogene Aparecida Cestari
- 294-342** 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*
- 295-442** 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 Kolarova, Marie Novakova
- 296-323** Application of Cardiac Impedance Signal in the Reservoir-Wave Model of Circulatory System in Humans
Marek Żyliński*, Wiktor Niewiadomski, Marta Sadowiec, Marcel Młyńczak, Gerard Cybulski
- 297-234** Central Hemodynamic Variability During Sleep in Subjects with and without Atrial Fibrillation
Michał Sitarek, Gerard Cybulski*

PB3**ECG Miscellaneous**

Room: Rooms 1-4

298-332Human Activity Recognition for Physical Rehabilitation
Using Wearable Sensors Fusion and Artificial Neural
Networks

Elias Kantoč*

299-134Biometrics via Spatial P-QRS-T Loop Features: Effect of
Different VCG Transformations

Vessela Krasteva*, Irena Jekova, Ramun Schmid

300-171Automatic Registration of 3D Camera Recording to
Model for Leads Localization

Samir Alioui*, Martim Kastelein, Eelco van Dam, Peter van Dam

301-222An ECG Web Services Portal for Standard and Serial ECG
Analysis with Enhanced 3D Graphical Capabilities

Jocelyne Fayn*, Paul Rubel

302-208Novel Algorithm for Estimating ST-segment Parameters
Sergey Akulov*, Aleksandr Fedotov**303-394**Electrophysiological Effects on Renal
Ischaemia/Reperfusion-Induced Cardiac HypertrophyKarine Panico*, Giovanni Weber, Marcela S. Carneiro-Ramos,
Joyo Salinet**304-42**

Ventricular Repolarization Variation

Di Lu*

305-393Beat-to-beat T-peak-T-end Interval Duration Variability
Assessed by RR-Interval Histogram Analysis in Healthy
Sedentary and AthleteOlivassı Nasario-Junior, Paulo Roberto Benchimol-Barbosa,
Jurandir Nadal*

- 306-443** 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
- 307-67** Quantitative Measurement of Respiratory Split in the Second Heart Sound
Hong Tang*, Huaming Chen, Ting Li
- 308-390** 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

PB4 Ventricular Modelling

Room: Rooms 1-4

- 309-174** Intracellular Calcium Regulation in Canine Ventricular Myocytes: a Simulation Study
Estefania Renu, Jose M Ferrero*
- 310-50** Effects of Small Conductance Calcium Activated Potassium Channels in Cardiac Myocytes.
Angelina Peparanda*, Blas Echebarria, Enrique Alvarez-Lacalle, Inmaculada R. Cantalapiedra
- 311-340** Dimension Reduction for the Emulation of Cardiac Electrophysiology Models for Single Cells and Tissue
Brodie Lawson*, Chris Drovandi, Pamela Burrage, Blanca Rodriguez, Kevin Burrage
- 312-147** Effects of Quinidine on Short QT Syndrome Variant 2 in the Human Ventricles: a Modelling Study
Cunjin Luo, Kuanquan Wang, Henggui Zhang, Yang Liu*, Yong Xia
- 313-412** Ranolazine Attenuates Stretch-induced Modifications of Electrophysiological Characteristics in HL-1 Cells
Irene Del-Canto, Lidia Gomez-Cid, Ismael Hernandez-Romero, Marva S Guillem, Maria Eugenia Fernandez-Santos, Felipe Atienza, Luis Such, Francisco Fernandez-Aviles, Francisco J Chorro, Andreu M Climent*
- 314-25** One-dimensional Simulation of Alternating Conduction under Hyperkalaemic Conditions
Jiaqi Liu*, Yuan Gao, Yinglan Gong, Ling Xia, Wenlong Xu, Mingfeng Jiang, Gangmin Ning
- 315-264** A Big Data Approach to Myocyte Membrane Analysis: Using Populations of Models to Understand the Cellular Causes of Heart Failure
Carlos Ledezma*, Benjamin Kappler, Veronique Meijborg, Bas Boukens, Marco Stijnen, PJ Tan, Vanessa Diaz-Zuccarini

- 316-297** Estimation of Purkinje Myocardial Junctions from Noisy Ventricular Electrical Samples
Fernando Barber, Miguel Lozano, Ignacio Garcia, Rafael Sebastian*
- 317-92** Modelling Stochastic Calcium Waves in Cardiac Myocytes Based on the Two-Pool CICR Model
Serife Arif*, Choi-Hong Lai, Nadarajah Ramesh

PB5 Heart Rate Variability

Room: Rooms 1-4

- 318-401** Emotion Recognition Using Parabolic Phase Space Mapping of Heart Rate Variability Signal
Shahab Rezaei*, Sadaf Moharreri, Saman Parvaneh
- 319-457** 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
- 320-93** 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
- 321-334** Linking Changes in Heart Rate to Mood Changes in Daily Life
Oliver Carr*, Fernando Andreotti, Kate Saunders, Amy Bilderbeck, Guy Goodwin, Maarten De Vos
- 322-369** Heart Rate Asymmetry in Response to Colored Light
Saman Parvaneh*, Nader Jafarnia Dabanloo, Shahab Rezaei, Sadaf Moharreri, Nima Toosizadeh
- 323-395** New Feature Set for Better Representation of Dynamic of RR Intervals in Poincare Plot
Sadaf Moharreri, Nader Jafarnia Dabanloo, Shahab Rezaei, Saman Parvaneh*
- 324-378** Using Distances to Classify Recordings of Young and Elderly Subjects
Stavroula Vlachothanasi, George Manis*

PB6 Blood Pressure

Room: Rooms 1-4

- 325-4** Non-Invasive Detection of Intracranial Hypertension using Random Forests
Federico Wadehn*, Thomas Heldt, Dario Walser, Marek Czosnyka, Michal Bohdanowicz
- 326-370** Comparison of Systolic Period Duration Using Aortic Flow or Pressure Based Methods in Anesthetized Patients
Arthur Le Gall*, Alexandre Laurin, Fabrice Vallee, Denis Chemla
- 327-471** 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
- 328-252** Pulse Interval Modulation-based Method to Extract the Respiratory Rate from Oscillometric Cuff Pressure Waveform during Blood Pressure Measurement
Yihan Gui, Fei Chen, Alan Murray, Dingchang Zheng*
- 329-65** Spatial Characterization of Hypertension Clusters using a Rural Australian Clinical Database
Rachel Whitsed, Ana Horta, Faezeh Marzbanrad*, Herbert F Jelinek
- 330-194** Characterization of a Carotid Distention Waveform from Audio Signals Acquired with a Stethoscope
Ivan Maldonado Zambrano, Alfredo Illanes*, Axel Boese, Michael Friebe
- 331-121** Coupling Analysis for Systolic, Diastolic and RR Interval Time Series Using Multivariable Fuzzy Measure Entropy
Lina Zhao*, Shoushui Wei, Hong Tang, Chengyu Liu

332-351

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 System Analysis in Fetal and Pre-term Populations

Room: Rooms 1-4

333-349 Role of Individual Calf Muscles towards Blood Pressure Regulation: a Pilot Study

Ajay Verma, Da Xu, Amanmeet Garg, Malcom Tremblay, Andrew Blaber, Kouhyar Tavakolian*

334-75 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

335-298 Effect of Chronic Hypoxia on Autonomic Nervous System of Fetal Mice

Ahsan Khandoker*, Thuraia Al Khoori, Takahiro Minato, Takuya Ito, Yoshitaka Kimura

336-127 Algorithm for Risk Stratification of Preterm Infants
Venkata Naga Sai Apurupa Amperayani*, Premananda Indic, Colm Travers, Riccardo Barbieri, David Paydarfar, Namasivayam Ambalavanan

337-361 Quantification of Fetal ST-Segment Deviations
Angela Agostinelli*, Mariachiara Di Cosmo, Agnese Sbrollini, Luca Burattini, Micaela Morettini, Francesco Di Nardo, Sandro Fioretti, Laura Burattini

338-343 Analyzing Fetal and Maternal Cardiorespiratory Interactions During Labor
Faezeh Marzbanrad*, Gari Clifford

PB8

Atrial Fibrillation

Room: Rooms 1-4

339-240

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, Ibrahim Yucel Ozbek

340-201

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 Łeppek

341-103

Experimental Study of Atrial Fibrillation Cycle Length
During Rapid Atrial Septal Pacing

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

342-125

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

Raul Alcaraz, Fernando Hornero, Josi J Rieta*

PB9 Challenge Posters II

Room: Rooms 1-4

- 343-47** Atrial Fibrillation Screening through Combined Timing Features of Short Single-Lead Electrocardiograms
Manuel Garcva, Juan Rodenas, Raul Alcaraz, Josi J Rieta*
- 344-131** Atrial Fibrillation Detection Using Feedforward Neural Networks and Automatically Extracted Signal Features
Santiago Jimenez-Serrano, Jaime Yagóe-Mayans*, Elena Simarro-Mondejar, Conrado J. Calvo, Francisco Castells, Josi Millet Roig
- 345-204** Atrial Fibrillation Classification Using Decision Tree
Minggang Shao*, Guangyu Bin, Jiao Huang, Haipeng Qin, Shuicai Wu
- 346-119** A Hierarchical Cardiac Rhythm Classification Methodology Based on Electrocardiogram Fiducial Points
Dionisije Sopic*, Elisabetta De Giovanni, Amir Aminifar, David Atienza
- 347-144** Detection of AF and Other Rhythms Using RR Variability and ECG Spectrum Measures
Lucia Billeci*, Franco Chiarugi, Magda Costi, David Lombardi, Maurizio Varanini
- 348-29** Arrhythmia Classification via Time and Frequency Domain Analyses of Ventricular and Atrial Contractions
Irena Jekova*, Todor Stoyanov, Ivan Dotsinsky
- 349-357** Combining Deep Learning and Feature-Based Classification to Detect Atrial Fibrillation from a Short ECG Recording
Matthieu Da Silva-Filarder*, Faezeh Marzbanrad
- 350-176** Can Supervised Learning Be Used to Classify Cardiac Rhythms?
Marcus Vollmer*, Neetika Nath, Leonard Caanitz

- 351-295** Identification of AF and Other Cardiac Arrhythmias from a Single-lead ECG Using Gaussian Processes
Maria Tziakouri*, Constantinos Pitris, Christina Orphanidou
- 352-105** Automated Detection of Atrial Fibrillation using Fourier-Bessel expansion and Teager Energy Operator from Electrocardiogram Signals
Shivnarayan Patidar*, Ashish Sharma, Niranjana Garg
- 353-114** Atrial Fibrillation Classification from a Short Single Lead ECG Recording by using a Combination of Convolutional and Long-Short Term Memory Neural Networks
Vyintas Maknickas*, Algirdas Maknickas
- 354-472** Feature Selection for the Classification of Atrial Fibrillation Based on Entropy Measurements
Pedro Quintana-Morales*, Antonio G. Ravelo-Garcia, Eduardo Hernandez-Perez, Sofya Martyn-Gonzalez, Juan L. Navarro-Mesa
- 355-199** Detection of Atrial Fibrillation Using Tensors
Griet Goovaerts*, Martijn Bouss, Otto Debals, Lieven De Lathauwer, Sabine Van Huffel
- 356-216** AF Detection with Atrial and Ventricular-based Features Using Machine Learning
Pedro Alvarez, Josu Sanchez, Andreu M. Climent, Maria de la Salud Guillem Sanchez*
- 357-335** Afib and Other Arrhythmia Classification Using Beats Directed Graph Path Searching
Cheng Shi*, Savio Monteiro
- 358-425** Atrial Fibrillation Classification from a Short Single Lead ECG Recording Using Hierarchical Classifier
Daniel Giaime, Erin Coppola, Nihar Vanjara, Prashna Gyawali*, Linwei Wang
- 359-157** Electrocardiogram Classification -- a Human Expert Way
Heikki Vöölänen*, Jarno Mäkelä

- 360-350** Classification of ECG Recordings with Neural Networks Based on Specific Morphological Features and Regularity of the Signal
Katarzyna Stępień, Iga Grzegorzczuk*
- 361-386** Classification of AF from Short ECG Signal Using Statistical and Morphological Features
Ruhallah Amandi*, Mohammad Farhadi, A.J Zarrin
- 362-426** Atrial Fibrillation Classification Based on Delay Differential Equations
Clemens Zeile*, Florian Kehrle, Sebastian Sager
- 363-355** 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

SC1

Challenge II

Chairs: Gari Clifford and David Albert

Room: Amphi Louis Antoine

364-480

AF Classification from a Short Single Lead ECG

Recording: the Physionet Computing in Cardiology
Challenge 2017

14:15-14:30 Gari Clifford*

365-239

A Consensus Based Approach for Atrial Fibrillation
Detection Using Heart Rate Variability, Morphology, and
Signal Quality Metrics

14:30-14:45 Fernando Andreotti, Oliver Carr*, Marco A F Pimentel, Adam
Mahdi, Maarten De Vos

366-352

Classification of Atrial Fibrillation Using Multidisciplinary
Features and Gradient Boosting

14:45-15:00 Andrew Goodwin, Sebastian Goodfellow*, Danny Eytan,
Robert Greer, Mjaye Mazwi, Peter Laussen

367-175

AF Classification Based on Bagging Neural Network

15:00-15:15 Jiayu Chen*, Stephen Redmond, Heba Khamis, Nigel Lovell

368-223

Beat by Beat: Classifying Cardiac Arrhythmias with
Recurrent Neural Networks

15:15-15:30 Patrick Schwab*, Gaetano Claudio Scebba, Jia Zhang, Marco
Delai, Walter Karlen

369-57

Automatic Detection of Atrial Fibrillation and Other
Arrhythmias in Holter ECG Recordings using PQRS
Morphology and Rhythm Features

15:30-15:45 Filip Plesinger*, Petr Nejedly, Ivo Viscor, Josef Halamek, Pavel
Jurak

SC2 Special Session: Clinical Guidelines in e-Health: Where do we stand?

Chairs: Catherine Chronaki and Iana Simova

Room: Amphi L

370-362 eHealth Standards and Interoperability in Cardiology:
the Role of Clinical Guidelines in Patient Summaries

14:15-14:35 Catherine Chronaki*

371-95 Remote ECG Interpretation: Guidelines and their
Implementation

14:35-14:50 Iana Simova*, Milen Predovski, Ivaylo Christov, Dimitar Simov

372-55 Guidelines for Remote Telemonitoring of Implantable
Devices

14:50-15:05 Polychronis Dilaveris*, Christos-Konstantinos Antoniou,
Konstantinos Gatzoulis, Dimitrios Tousoulis

373-435 Early Supported Discharge for Stroke Patients: Where
Do We Stand in Terms of Guidelines and Their
Implementation

15:05-15:20 Silvina Santana*, Peter Langhorne

SC3 Special Session: Electrocardiographic Imaging: Challenges in Clinical Evaluation and Validation

Chairs: Linwei Wang and Dana Brooks

Room: Amphi M

374-477 Noninvasive Electrocardiographic Imaging: Touching Ground in Clinical Cardiology (Clinical Talk)

14:15-14:45 Paul Volders*, Matthijs Cluitmans

375-289 Overcoming Barriers to Quantification and Comparison of Electrocardiographic Imaging Methods: a Community-Based Approach

14:45-15:00 Jwala Dhamala*, Jaume Coll-Font, Jess Tate, Maria de la Salud Guillem Sanchez, Dana Brooks, Linwei Wang, Rob MacLeod

376-97 Analyzing Source Sampling to Reduce Error in ECG Forward Simulations

15:00-15:15 Jess Tate*, Karli Gillette, Brett Burton, Wilson Good, Jaume Coll-Font, Dana Brooks, Rob MacLeod

377-217 Endocardial Mapping Validation of Non-invasive Estimation of Atrial Fibrillatory Drivers by Electrocardiographic Imaging

15:15-15:30 Miguel Rodrigo, Andreu M. Climent, Ismael Hernandez-Romero, Mahmood Alhusseini, Christopher AB Kowalewski, Sanjiv M Narayan, Felipe Atienza*, Maria de la Salud Guillem Sanchez

Special Session: Understanding the Mechanisms of Atrial Fibrillation using Novel Computational Approaches

Chairs: Jichao Zhao and Gunnar Seemann

Room: Room N

378-28

Stability of Conduction Patterns in Persistent Atrial Fibrillation

14:15-14:35 Pawel Kuklik*, Benjamin Schöffer, Ruken Φ Akbulak, Mario Jularic, Christiane Jungen, Jana Nuehrich, Niklas Klatt, Christian Eickholt, Christian Meyer, Stephan Willems

379-228

The Combination of Pulmonary Vein Electrophysiology and Atrial Fibrosis Determines Driver Location

14:35-14:50 Caroline Roney*, Jason Bayer, Rumi Dubois, Marianna Meo, Hubert Cochet, Pierre Jaos, Edward Vigmond

380-410

The Efficacy of Class III Anti-arrhythmic Drug Action in 3D Canine Atrial Models: Is the blockade of IKCa pro- or anti-arrhythmic?

14:50-15:05 Marta Varela, Purwa Dar, Jules Hancox, Oleg Aslanidi*

381-371

A Computational Framework to Benchmark Basket Catheter Guided Ablation

15:05-15:20 Martino Alessandrini, Maddalena Valinoti, Axel Loewe, Tobias Oesterlein, Olaf Doessel, Cristiana Corsi, Stefano Severi*

MD Closing Plenary

Chairs: Guy Carrault and Willem Dassen

Room: Amphi Louis Antoine

382-59 The VED Meter - a New Tool to Measure the Ventricular Conduction Abnormalities in Heart Failure Patients (CTA Winner)

16:00-16:15 Filip Plesinger*, Pavel Jurak, Josef Halamek, Pavel Leinveber, Scott McNitt, Arthur J. Moss, Wojciech Zareba, Jean-Pilippe Couderc

383-384 Tolerance to Spikes: a Comparison of Sample and Bubble Entropy

16:15-16:30 George Manis*, Roberto Sassi

384-465 Localized Activation Delay Manifests as the Early Repolarization Pattern - a Simulation Study

16:30-16:45 Peter L Sørensen*, Jacob Melgaard, Johannes Struijk, Kasper Sørensen, Jürgen K Kanter, Claus Graff

385-451 Effects of Fibroblasts on the Electrophysiology of Cardiomyocytes from Different Regions of the Human Atrium: a Simulation Study

16:45-17:00 Gunnar Seemann*, Eike M. Wölfers

Author Index

This index gives the abstract order of presentations by each author in the program so that you can easily locate the presentations of a given author in the Program Details section. This index does not refer to page numbers.

Aalto-Setälä, Katriina.....	208	Aquilera-Perez, Jorge.....	127
Aarts, Ronald.....	273	Arafati, Mehrnoosh.....	156
Aarts, Ronald M.....	50	Aramendi, Elisabete.....	9
Abbasi, Mitra.....	61	Arenal, Angel.....	228
Abboud, Shimon.....	10, 23	Arenal, Ángel.....	116
Abdollahi, Amir.....	156	Arevalo, Hermenegild.....	20
Abdollahpur, Mostafa.....	115, 159, 185	Arif, Serife.....	317
Achilli, Andrea.....	129	Ariga, Rina.....	230
Adatya, Sirtaz.....	188	Asensio, Ainhua.....	249
Addetia, Karima.....	188	Asif, Rahman.....	160
Agostinelli, Angela 85, 221, 237, 239, 334, 337		Aslanidi, Oleg.....	33, 213, 380
Aguilo, Jordi.....	320	Aston, Philip.....	91, 201
Aguiló, Jordi.....	263	Astudillo-Salinas, Darwin.....	37
Aiger, Montserrat.....	282, 283	Atienza, David.....	287, 346
Akbilic, Oguz.....	180	Atienza, Felipe.....	2, 18, 116, 146, 228, 313, 377
Akbulak, Ruken Ö.....	378	Attarodi, Gholamreza.83, 84, 99, 103, 110, 187, 290	
Akulov, Sergey.....	302	Auffret, Vincent.....	134, 144
Al Khoori, Thuraia.....	335	Augustyniak, Piotr.....	73
Alcaraz, Raul 111, 112, 193, 203, 238, 257, 342, 343		Avril, Stéphane.....	144
Alessandrini, Martino.4, 45, 189, 194, 381		Ayala, Unai.....	9
Alhousseini, Mahmood.....	377	Aydemir, Burak.....	175
Alioui, Samir.....	300	Azevedo Limeira, Gabriel.....	87
Allami, Ragheed.....	118	Babaeizadeh, Saeed.....	14, 140, 160
Almeida, Tiago.....	195, 197	Badel, Pierre.....	144
Almendral-Garrote, Jesús.....	104	Badilini, Fabio.....	136
Alonso, Erik.....	9	Baer, Karl-Juergen.....	262
Alonso-Atienza, Felipe.....	248	Baharav, Anda.....	276
Altuve, Miguel.....	148	Bahrami Rad, Ali.....	69
Álvarez-García, Jesús.....	149	Bailón, Raquel.....	206, 207, 263, 266, 272, 275, 320
Alvarez-Lacalle, Enrique.....	310	Balasubramanian, Venki.....	118
Amandi, Ruhallah.....	361	Bandyopadhyay, Soma.....	174
Ambalavanan, Namasivayam.....	336	Banerjee, Rohan.....	174
Aminifar, Amir.....	287, 346	Banerjee, Swati.....	272
Amperayani, Venkata Naga Sai Apurupa.....	336	Baranowski, Rafał.....	12
Ananou, Bouchra.....	97	Barber, Fernando.....	316
Anderson, David.....	175	Barbieri, Riccardo.....	153, 157, 336
Andreotti, Fernando.....	321, 365	Bargiotas, Ioannis.....	78, 80
Antoniou, Christos-Konstantinos.....	372	Bari, Vlasta.....	1, 204, 279
Anvari, Seyed Mohsen.....	327	Baron, Lukas.....	254
Aparecida Cestari, Idágene.....	293	Barquero-Pérez, Óscar. 199, 240, 248, 255	

Barquero-Pérez, Vscar.....	209
Bartolucci, Chiara.....	64
Bastida, José M.....	5
Bastogne, Thierry.....	133
Batista, Levy.....	133
Baydoun, Mohammed.....	178
Bayer, Jason.....	231, 379
Bear, Laura.....	93, 101, 105
Beckler, Matthias.....	133
Beghella Bartoli, Marta.....	85
Behar, Joachim A.....	165, 235
Behar, Nathalie.....	308
Béhar, Nathalie.....	205
Bekkers, Sebastiaan C.A.M.....	44
Benchimol-Barbosa, Paulo Roberto.....	305
Berdov, Dmitry.....	292
Berjano, Enrique.....	145
Bermejo, Javier.....	228
Berto, Francesca.....	194
Beuchée, Alain.....	233, 284
Bilderbeck, Amy.....	321
Billeci, Lucia.....	98, 347
Bin, Guangyu.....	345
Bittencourt, Lia.....	235
Blaber, Andrew.....	26, 332, 333
Boese, Axel.....	135, 330
Bohdanowicz, Michal.....	325
Bollepalli, Sandeep Chandra.....	163
Bond, Raymond.....	136, 212
Bond, Raymond R.....	225
Bond, Raymond R.....	7
Bonet-Luz, Esther.....	91
Bonfiglio, Annalisa.....	129
Bonizzi, Pietro.....	170, 285
Bonomi, Alberto.....	273
Bonomi, Alberto G.....	50
Borges, Maira.....	71
Bortolan, Giovanni.....	11
Bosnjak, Antonio.....	130
Böttcher, Morten.....	141
Bouaou, Kevin.....	78, 80
Bouazizi-Verdier, Khaoula.....	192
Bouchakour, Rachid.....	97
Boukens, Bas.....	59, 210, 315
Boussé, Martijn.....	355
Bouyssier, Julien.....	63
Braun, Fabian.....	142
Brennan, Paul F.....	138
Brooks, Dana.....	54, 271, 375, 376
Bruge, Sophie.....	46
Buchner, Teodor.....	155
Bueno Orovio, Alfonso.....	18

Bueno-Orovio, Alfonso.....	2, 230, 251
Burattini, Laura.....	85, 221, 237, 239, 334, 337
Burattini, Luca.....	221, 337
Burrage, Kevin.....	311
Burrage, Pamela.....	311
Burschka, Darius.....	3
Burton, Brett.....	376
Bustin, Aurélien.....	3
Buyse, Bertien.....	234, 242, 275
Byćue, Pierre-Elliott.....	22
C. Lardo, Albert.....	42
Caanitz, Leonard.....	350
Caiani, Enrico.....	38, 81, 137
Caicedo, Alexander.....	266
Cairns, Andrew.....	136
Calvo, Conrado J.....	106, 107
Calvo, Mireia.....	205
Cámara, Miguel Ángel.....	248
Camargo, Erick.....	53
Caminal, Pere.....	149
Campos, Carlos.....	31
Cano, Óscar.....	286
Cantalapiedra, Inmaculada R.....	310
Cantero, Sandra.....	209
Caragiuli, Manila.....	334
Carapella, Valentina.....	230
Carneiro-Ramos, Marcela S.....	303
Carr, Oliver.....	321, 365
Carrasco-Sosa, Salvador.....	236, 265
Carrault, Guy.....	233, 284
Casajús, Jose Antonio.....	207
Casellato, Claudia.....	137
Castells, Francisco.....	79, 117, 344
Castro, Miguel.....	134, 144
Cebrián, Antonio.....	79, 106
Cerina, Luca.....	28, 52
Cerruto, Giuiano.....	261
Cerutti, Sergio.....	1
Cervigón, Raquel.....	79, 117
Cestari, Idágene.....	53
Ceulemans, Berten.....	259
Challa, S Sastry.....	163
Chamorro-Servent, Judit.....	56
Chan, Hsiao-Lung.....	86
Chang, Burt.....	147
Chapelle, Dominique.....	24
Charaï, Ahmed.....	97
Chaves Alberto, Alex.....	87
Chemla, Denis.....	326
Chen, Fei.....	328
Chen, Huaming.....	307

Chen, Jiayu.....	367	Da Silva-Filarder, Matthieu	349
Chen, Shuhang.....	41	Dabiri Aghdam, Asghar	110
Chen, Szi-Wen.....	147	Dai, Jian	215
Chen, Zexi	75	D'Alessandro, Giacomo	52
Chenoune, Yasmina	78	Dalla Vecchia, Laura.....	1
Chiarugi, Franco.....	347	Daly, Jonathan.....	235
Child, Nick	280	Dar, Purwa	380
Chirasvi, Halekote Ramesh.....	19	Datta, Shreyasi.....	174
Chiu, Brian.....	241	Davis, Laura	7
Chiu, Hung-wen.....	139	Daya, Mohamud.....	5, 8, 113
Chmelfik, Jifí	173	de Bie, Johan.....	241
Chorro, Francisco	107	De Cesare, Alain	78, 80
Chorro, Francisco J.....	313	de Chazal, Philip.....	363
Chorro, Javier.....	106	De Cooman, Thomas	259
Christie, Mark.....	201	De Giovanni, Elisabetta.....	287, 346
Christov, Ivaylo	11, 16, 88, 176, 371	De Jongh, Marjolein C.....	294
Chronaki, Catherine.....	370	de la Cruz, Alicia	64
Chu, Gavin.....	197	De Lathauwer, Lieven.....	355
Chubb, Henry	213	De Maria, Beatrice.....	1, 204, 279
Chumarnaya, Tatiana.....	292	de Morree, Helma.....	273
Cinca, Juan	149	de Morree, Helma M.....	50
Ciotti, Ilaria	237	de Vecchi, Adelaide.....	213
Clark, Elaine.....	13	De Vos, Maarten.....	321, 365
Clifford, Gari	65, 162, 338, 364	Debals, Otto	355
Clifford, Gari D.....	235	Debatin, Sebastian	124
Climent, Andreu M.....	313	Dedè, Luca.....	4
Climent, Andreu M.....	2, 18, 75, 116, 146, 228, 248, 356, 377	Deharo, Jean-Claude.....	97
Cluitmans, Matthijs.....	44, 245, 374	Dekker, Lukas	50, 273
Cochet, Hubert.....	100, 379	Delai, Marco.....	368
Codur, Mustafa.....	339	Del-Canto, Irene.....	313
Coimbra, Miguel.....	184	Delliaux, Stéphane	97
Coll-Font, Jaume.....	54, 271, 375, 376	Denny, Frances.....	7
Conroy, Bryan.....	160	Derakhshan Mehr, Pegah	84
Conroy, Thomas	48	D'Ettorre, Claudia.....	52
Coppola, Erin.....	358	Deviaene, Margot	234, 275
Corino, Valentina	52, 224, 288	Dhamala, Jwala.....	375
Corrado, Cesare.....	202	D'hooge, Jan.....	189
Corsi, Cristiana	4, 45, 194, 241, 381	Di Cosmo, Mariachiara	337
Costi, Magda	347	Di Francesco, Fabio	157
Couderc, Jean-Philippe.....	48, 62	Di Nardo, Francesco	85, 221, 237, 239, 334, 337
Couderc, Jean-Pilippe.....	382	Diamos, Sudnya.....	167
Coudière, Yves	22, 56, 100	Diaz-Zuccarini, Vanessa.....	59, 210, 315
Coudiure, Yves.....	76	Dietenbeck, Thomas.....	78, 80
Courtial, Nicolas.....	46	D'Ignazio, Michela.....	237
Coury Pedrosa, Roberto.....	87	Dilaveris, Polychronis.....	372
Craiem, Damian.....	80	Dillon-Murphy, Desmond.....	213
Crawford, Paul.....	7	Djermoune, El-Hadi.....	133
Crijns, Harry	285	Doerr, Leo.....	133
Cutcliffe, Matthew	277	Doessel, Olaf.....	124, 125, 194, 247, 254, 267, 381
Cybulski, Gerard	296, 297	Dokuchaev, Arseniy.....	229
Czosnyka, Marek.....	325		

Donal, Erwan.....	43	Fischer, Andreas.....	243
Dotsinsky, Ivan.....	348	Flores-Yepes, Jose-Antonio	269
Driessens, Kurt.....	170	Forti, Davide.....	4
Drovandi, Chris	311	Friebe, Michael.....	132, 135, 330
Dubois, Remi	93	Friedman, Paul.....	32
Dubois, Rémi	56, 101, 379	Frigo, Carlo	137
Duchateau, Josselin.....	93	Fuentealba, Patricio	278
Dutta Choudhury, Anirban	174	Funston, Rebecca.....	7
Echebarria, Blas	310	G. Marques, Antonio.....	240, 255
Eerikäinen, Linda M.....	273	Gabbouj, Moncef.....	69
Eerikäinen, Linda M.....	50	Gabriel, Aileen	153
Eftestøl, Trygve	9	Gajre, Suhas	94, 95
Ehtiati, Nastaran.....	99	Gao, Yuan.....	314
Eickholt, Christian.....	378	Garatachea, Nuria.....	207
El-Hajj, Ali.....	178	Garcia, Constantino A.	166
Erem, Burak.....	271	Garcia, Ignacio	316
Escalona, Omar.....	71, 72, 130	Garcia, Ronald.....	153
Eslamizadeh, Mehdi.....	103, 290	García-Alberoa, Arcadi.....	209
Everss Villalba, Estrella.....	269	Garcia-Alberola, Arcadi.....	269
Evin, Morgane.....	192	García-Alberola, Arcadi.....	199
Eyal, Shuli	276	García-Carretero, Rafael.....	240
Eytan, Danny.....	366	Garcha, Manuel	343
Fabbri, Alan	17, 120, 121	Garcha-Carretero, Rafael.....	255
Fabbri, Claudio	45	Garg, Amanmeet.....	332, 333
Faes, Luca	204	Garg, Niranjana.....	352
Faini, Andrea.....	137	Garreau, Mireille.....	46, 134
Fallet, Sibylle.....	142	Garzón Rey, Jorge Mario.....	263
Farhadi Sedehi, Javid.....	99, 103, 290	Garzyn Rey, Jorge Mario	320
Farhadi, Mohammad.....	361	Gatzoulis, Konstantinos.....	372
Fayn, Jocelyne	301	Gencer, Umit.....	78, 80
Fedotov, Aleksandr.....	302	Georgieva, Sofia.....	11
Felblinger, Jacques.....	227	Ghaffari, Ali.....	159, 185
Felipe, Antonio.....	64	Gharbia, Omar	42
Félix, Paulo.....	166	Ghaziri, Hassan.....	178
Fenton, Flavio	198	Ghiasi, Shadi	158, 159, 185
Fernandez-Aviles, Francisco.....	2, 228	Ghimire, Sandesh.....	57
Fernández-Avilés, Francisco. 18, 116, 146, 313		Ghosh, Shameek.....	128
Fernandez-Bes, Jesus	60, 252	Giaime, Daniel.....	358
Fernández-Santos, María Eugenia.....	313	Gieraltowski, Jan	12, 154, 281
Fernández-Santos, María Eugenia	146	Gil, Eduardo.....	28, 206, 263, 272, 275, 282, 283, 320
Ferrero, Jose M.....	249, 250, 309	Gill, Jaswinder.....	280
Feuillâtre, Håilåne.....	134	Gillette, Karli	231, 376
Figuera, Carlos.....	116, 199, 209, 248	Gillis, Anne	105
Fink, Mathias.....	24	Gimeno, Juan R.....	64
Finlay, Dewar	136, 138, 212, 219, 277	Gimeno-Blanes, Francisco-Javier	269
Finlay, Dewar D.....	225	Giraldo, Beatriz	262
Finlay, Dewar D.....	7	Giron, Alain.....	80, 192
Finlay, Malcolm	222	Gliner, Vadim	171
Fioretti, Sandro	85, 221, 237, 239, 334, 337	Gomez-Cid, Lidia.....	313
Firoozabadi, Reza	140	Gomis, Pedro	149, 205
		Gommers, Suzanne	44

Gong, Yinglan	314	Hannun, Awni	167
Gonzalez, Teresa	64	Hanson, Ben	280
Gonzalez-Fernandez, Rene Ivan	127	Hasna, Octavian Lucian	164
González-Otero, Digna M	5, 6	Haueisen, Jens	262
González, Francisco	238, 257	Haverinen, Samuli	151
González-Suárez, Ana	145	Hayn, Dieter	169
Good, Willson	271, 376	Hayward, Martin	39
Goodfellow, Sebastian	366	He, Runnan	181
Goodwin, Andrew	366	Hejc, Jakub	150, 295
Goodwin, Guy	321	Hejč, Jakub	173
Goovaerts, Griet	15, 92, 355	Heldt, Thomas	325
Goswami, Nandu	332	Helwan, Abdulkader	82
Goya-Esteban, Rebeca	104, 199, 209, 240, 255	Hemmati, Nazanin	84, 110
Graff, Claus	218, 384	Henriksson, Mikael	51
Granot, Yair	10, 23	Hernandez, Alfredo	233, 284, 308
Grau, Vicente	230	Hernández, Alfredo	205
Greco, Alberto	157	Hernández-Pérez, Eduardo	354
Greer, Robert	366	Hernandez-Romero, Ismael	313
Gregg, Richard	14	Hernández-Romero, Ismael 2, 18, 75, 146, 228, 248, 377	
Grigoriev, Roman	198	Hernando, Alberto	282, 283
Gruev, Ivan	11	Hernando, David	207
Grzegorzczuk, Iga	154, 360	Herndon, Conner	198
Gsell, Matthias	217	Hernández-Romero, Ismael	116
Guan, Zehong	215	Heyde, Brecht	189
Gui, Yihan	328	Hocini, Méléze	101
Guill, Antonio	106, 107	Holmqvist, Fredrik	288
Guillem Sánchez, Maria de la Salud ... 2, 18, 75, 116, 195, 228, 248, 356, 375, 377		Hong, Shenda	179
Guillem, María S	313	Hoog Antink, Christoph	168
Guillén-Mandujano, Alejandra	236, 265	Horacek, B. Milan	41
Guldenring, Daniel ... 7, 136, 212, 219, 225, 277		Hornero, Fernando	342
Gurev, Viatcheslav	62	Horta, Ana	329
Gurevich, Daniel	198	Hoshiyama, Masaki	152
Gutiérrez, J.J.	8, 113	Houriez--Gombaudo-Saintonge, Sophia . 78, 80	
Gutierrez, Marco Antonio	31	Hu, Weichih	190
Guyot, Pauline	133	Hu, Xiao	15
Guzman, Jairo Hernandez	48	Huang, Jiao	345
Gyawali, Prashna	41, 358	Hughes, Alun D	220
Haddi, Zouhair	97	Huntjens, Peter	93
Hadia, Rohit	212, 219	Hyttinen, Jari	121
Haeberlin, Andreas	243	Igual, Begoña	79
Haigron, Pascal	134, 144	Illanes, Alfredo	135, 278, 330
Haïssaguerre, Michel	100, 101	Indic, Premananda	336
Halamek, Josef	96, 369, 382	Ing, Ros K.	24
Hall, Burr	48	Iozzia, Luca	28, 52
Halperin, Henry	42	Irakoze, Eric	19
Hamilton, Emily	264	Irusta, Unai	9
Han, Jiqing	256	Isasi, Iraia	9
Hancock, E. William	14	Ito, Takuya	335
Hancox, Jules	380	J. Calvo, Conrado	344
		Jabłoński, Mirosław	73

Jacquemet, Vincent	19
Jafari Tadi, Mojtaba.....	131, 327
Jafarnia Dabanloo, Nader ...	83, 84, 99, 103, 110, 187, 290, 322, 323
Jaïs, Pierre	100, 379
Jana, Soumya	163
Janjua, Ghalib	212
Janjua, Ghalib Muhammad Waqas	219
Janousek, Oto	150, 295
Jaramillo, Wilson	37
Jekova, Irena.....	299, 348
Jelinek, Herbert F.....	118, 329
Jeong, Daun.....	40
Jesacher, Barbara	243
Jiang, Mingfeng.....	314
Jimenez, Santiago	106
Jiménez, Santiago	79
Jimñnez-Serrano, Santiago	344
Johnson, Alistair	65
Johnston, Barbara.....	270
Johnston, Peter.....	246, 270
Jularic, Mario.....	378
Jungen, Christiane	378
Jurak, Pavel	96, 369, 382
Just, Steffen	260
Јdhne-Raden, Nico.....	27
Kachenoura, Nadja	29, 78, 80, 192
Kadir, Kushsairy	306
Kaisti, Matti.....	131, 143
Kalinin, Alexander.....	77
Kalinin, Vitaly.....	77, 229
Kamaleswaran, Rishikesan.....	180
Kamarul Azman, Muhammad Haziq ...	285, 306
Kania, Michał.....	100
Kanters, Jørgen K.....	218, 384
Kantoch, Eliaasz	298
Kańtoch, Eliaasz	73
Kapa, Suraj	32
Kappler, Benjamin	59, 210, 315
Karel, Joel.....	170
Karel, Joël.....	285
Karim, Rashed.....	47
Karlen, Walter.....	368
Kastelein, Martim	300
Katsaggelos, Aggelos K.....	69
Kehrlé, Florian.....	362
Keivanpour, Amir Hosein.....	327
Kennedy, Alan.....	212, 225, 277
Kestler, Hans	260
Khamis, Heba	367
Khandelwal, Sundeep	174

Khandoker, Ahsan.....	335
Khair, Ashraf W	220
Kietselaer, Bas L.J.H.....	44
Kim, Gene	188
Kim, Jiyeong.....	208
Kim, Yoo Seok.....	102
Kimura, Yoshitaka.....	335
Kiranyaz, Serkan.....	69
Klatt, Niklas	378
Knuutila, Timo.....	131
Koelsch, Srefan.....	261
Koivisto, Tero.....	131, 143, 327
Kokosinska, Dorota	12
Kolarova, Jana.....	150, 295
Kolářová, Jana.....	173
Kostiainen, Pekka.....	143
Kowalewski, Christopher AB.....	377
Kramer-Johansen, Jo	9
Krasteva, Vessela.....	176, 299
Kropf, Martin.....	169
Krug, Johannes	132
Kruse, Eric.....	188
Krzesiński, Paweł	154
Kuklik, Paweł	196, 378
Kuklik, Paweł	281
Kuusela, Jukka	208
Lagae, Lieven	259
Laguna, Pablo....	28, 38, 223, 226, 268, 272
Lahdenoja, Olli.....	131, 143
Lai, Choi-Hong.....	317
Lai, Pik-Yin.....	200
Lambiase, Pier	39, 222
Lambiase, Pier D.....	64
LAMY, Jïrðme.....	192
Lanata, Antonio.....	157
Landreani, Federica.....	81, 137
Lang, Roberto.....	188
Langhorne, Peter	373
Lankveld, Theo.....	285
Larsen, Bjarke Skogstad	141
Latcu, Decebal Gabriel.....	306
Laub, Priscille	67
Laurin, Alexandre.....	24, 326
Laussen, Peter	366
Lausser, Ludwig.....	260
Lawson, Brodie	311
Lazaro, Jesus....	28, 206, 266, 272, 275, 320
Le Breton, Hervé.....	134, 144
Le Gall, Arthur	326
Le Rolle, Virginie	205
Lebedev, Dmitry	292
Lebedeva, Viktoria.....	292

Lederlin, Mathieu	46
Ledezma, Carlos	59, 210, 315
Lee, Jiyeong	102
Lee, Sael	114
Lee, Yi-Sheng	86
LeGrice, Ian	108
Leinveber, Pavel	96, 382
Lemos, Pedro	31
Lenis, Gustavo	124, 267
Lenk, Claudia	35
Leonhardt, Steffen	168
Łepeć, Michał	340
Leppänen, Joni	143
Leturiondo, Luis A.	113
Leturiondo, Mikel	5, 8, 113
Lever, Nigel	105
Li, Chenxi	90
Li, Hongyan	179
Li, Jinyan	128
Li, Qiao	65, 162, 235
Li, Qince	181
Li, Ting	307
Li, Xin	195, 197
Liang, Shiuan-Ni	200
Liaw, Jiunn-Woei	147
Liberos, Alejandro 2, 18, 75, 116, 146, 228	
Libretti, Guido	136
Lim, Ki Moo	40, 102, 126
Limam, Mohamed	172
Linares, Pedro	71, 130
Lind, Pedro	35
Lino de Oliveira, Bernardo	20
Liu, Chengyu	65, 162, 319, 331
Liu, Huafeng	41
Liu, Jiaqi	314
Liu, Shufang	3, 227
Liu, Yang	181, 182, 312
Loewe, Axel..120, 124, 125, 194, 254, 267, 381	
Lombardi, David	347
Lombardi, Federico	52
Lopes, Coeli M.	62
Lopez-Fernandez, Marisabel	127
Lovell, Nigel	367
Lozano Albalade, María Teresa	282, 283
Lozano, Miguel	316
Lu, Di	304
Luca, Adrian	67, 287, 341
Lucor, Didier	80
Luermans, Justin J.G.	44
Luo, Cunjin	182, 312
Lyle, Jane	91

Lynn, William David	72
Lyon, Aurore	230, 253
Lyubimtseva, Tamara	292
Maan, Arie C.	294
Maass, Philipp	35
Mabo, Philippe	205, 308
Macedo, Maysa M G	31
Macfarlane, Peter	13
MacLeod, Rob	271, 375, 376
madani, nasimalsadat	159
Maesen, Bart	196
Maghooli, Keivan	83, 84, 187
Magomedova, Sonya	229
Mahajan, Ruhi	180
Mahdi, Adam	365
Mainardi, Luca	28, 52, 224, 261
Mäkelä, Jarno	359
Maknickas, Algirdas	353
Maknickas, Vyintas	353
Maldonado Zambrano, Iván	135
Maldonado Zambrano, Ivón	330
Maleckar, Mary	20
Malki, Guy	109
Man, Sumche	294
Manis, George	89, 324, 383
Mantovan, Roberto	194
Marcantoni, Ilaria	221
Margarito, Jenny	50
Mariani, Andrea	52
Marinov, Peter	251
Mark, Roger	65
Marozas, Vaidotas	49, 51, 206, 272
Marques, Victor	53
Maršánová, Lucie	173
Marschollek, Michael	27
Martin, Alba	38, 137
Martin, Lionel	142
Martínez, Juan Pablo	38
Martínez-Navarro, Hector	230
Martin-González, Sofia	354
Martín-Martínez, Mercedes	64
Martins, Raphaël P.	46
Martínez, Juan Pablo	268
Martínez, Miguel	111, 112
Marzbanrad, Faezeh	118, 329, 338, 349
Masci, Alessandro	4
Mastora, Ermioni	89
Matejkova, Magdalena	96
Matveev, Mikhail	16
Mazwi, Mjaye	366
Mazzeto, Marcelo	53
McAlister, Olibhñar	7

McCartney, Ben	7
McEneaney, David.....	7, 71, 72
McEwan, Alistair.....	363
McFrederick, Louise.....	71
McLaughlin, James	219
McLaughlin, James 71, 130, 138, 212, 225, 277	
McNitt, Scott	382
Medvedofsky, Diego	188
Meijborg, Veronique.....	59, 210, 315
Mejía-Rodríguez, Aldo R.	265
Melgaard, Jacob	218, 384
Melgarejo-Meseguer, Francisco-Manuel	269
Meng, Shu	105
Menghini, Filippo.....	4
Menini, Anne	3
Meo, Marianna.....	101, 379
Mercanti, Sofia.....	239
Meriheinä, Ulf.....	143
Meste, Olivier	285, 306
Meyer, Christian.....	378
Micale, Vincenzo	150
Miccoli, Alessandro.....	237
Migeotte, Pierre-François	81, 137
Mihl, Casper	44
Milagro, Javier.....	263, 320
Millet Roig, José.....	117, 344
Millet, José.....	79, 106, 107
Min, Xiaoyi.....	274
Minato, Takahiro	335
Mincholé, Ana	230
Mincholé, Ana	253
Młyńczak, Marcel.....	296
Moeyersons, Jonathan	242
Moharreri, Sadaf...115, 158, 318, 322, 323	
Molins-Bordallo, Zaida	269
Monasterio, Violeta.....	38
Monteiro, Savio	357
Montes de Oca-Colina, Gisela.....	127
Moody, Benjamin.....	65
Moore, Johnny.....	138
Moore, Tara	138
Mora, Maria Teresa.....	250
Mora-Jiménez, Inmaculada.....	240, 255
Mor-Avi, Victor	188
Morelli, Maria Sole.....	157
Moreno, Cristina	64
Moreno, Javier	117
Morettini, Micaela . 85, 221, 237, 239, 334, 337	
Mortara, David.....	241

Moser, Virginie.....	142
Moss, Arthur J.	382
Moti Nasrabadi, Ali	99
Moureaux, Jean-Marie	133
Mousseaux, Elie.....	78, 80, 192
Mozzoni, Claudia	334
Mukherjee, Ayan.....	174
Mulpuru, Siva.....	32
Muñoz, Carmen	64
Muñoz-Romero, Sergio	104
Murray, Alan.....	152, 328
Nabhan Homsí, Masun	161
Nadal, Jurandir.....	87, 305
Naderi, Faezeh.....	156
Nandi, Manasi	91, 201
Napadow, Vitaly.....	153
Narayan, Sanjiv M	377
Nardelli, Mimma	157
Narkilahti, Susanna	69
Nasario-Junior, Olivassý.....	305
Nath, Neetika	350
Navarro-Mesa, Juan L.	354
Negoita, Madalina	220
Neic, Aurel.....	231
Nejedly, Petr.....	369
Němcová, Andrea	173
Nesbit, Andrew.....	138
Newton Cestari, Ismar.....	293
Neycheva, Tatiana.....	88
Neycheva, Tatyana.....	176
Ng, G. André	195, 197
Nguyen Phuc Thu, Trang.....	233
Nguyen, Uyen Chau.....	44
Nicz, Pedro.....	31
Niederer, Steven.....	47, 202
Niederhauser, Thomas.....	243
Niewiadomski, Wiktor	296
Ning, Gangmin	314
Nordsletten, David.....	253
Novakova, Marie.....	150, 295
Novotna, Petra.....	295
Nuehrich, Jana	378
O'Neill, Mark.....	202
Odille, Freddy	3, 227
Oesterlein, Tobias	381
Oesterlein, Tobias G.	125
Olejnickova, Veronika.....	295
Oliveira, Jorge	184
Oliveras, Anna.....	64
Omer, Noam.....	10, 23
Onak, İnder Nazım	55
O'Neill, Mark.....	213

Oral, Emin Argun	339	Pipke, Matt	177
Orini, Michele. 39, 222, 223, 226, 261, 280		Pistuddi, Valeria	279
Orozco-Duque, Andres	123	Pitris, Constantinos	351
Orphanidou, Christina	351	Pladys, Patrick	233, 284
Ortigosa, Nuria	286	Plank, Gernot	202, 217, 231
Ortiz, Mercedes	104	Platonov, Pyotr	288
Ortiz-Puente, Raül	104	Plaza, Sandra	8
Ortmeier, Frank	278	Plesinger, Filip	96, 369, 382
Osorio, Diego I	193, 203	Ploux, Sylvain	93
Oster, Julien	165	Podziemski, Piotr	196
Otani, Niels	232	Poigai Arunachalam, Shivaram	32
Ouladsine, Mustapha	97	Polak, Sebastian	61
Ozbek, Ibrahim Yucel	339	Pons, Jean-François	97
Pachajoa, Diana C	123	Poremba, Emanuel	125
Paci, Michelangelo	121	Porta, Alberto	1, 204, 279
Pahlm, Olle	268	Potapov, Ilya	151
Pal, Arpan	174	Potolea, Rodica	164
Palacio-Baus, Kenneth	37	Potse, Mark	22, 76, 93, 100, 101
Palmius, Niclas	235	Potyagaylo, Danila	77, 247
Pan, Yue	90	Pourmodheji, Ali	30, 291
Pandit, Rahul	34	Prassl, Anton	231
Pani, Danilo	129	Precioso, Frederic	172
Panico, Karine	303	Predovski, Milen	371
Pänkäälä, Mikko	131, 143	Prinzen, Frits W.	44
Parati, Gianfranco	137	Provaznik, Ivo	150
Parker, Kim H.	220	Provazník, Ivo	173
Parvaneh, Saman. 115, 156, 158, 160, 318, 322, 323		Przybyło, Jaromir	73
Passini, Elisa	253	Pueyo, Esther	60, 223, 226, 252
Pastore, Carlos	53	Puri, Chetanya	174
Patidar, Shivnarayan	352	Puyo, Stéphane	101
Pavan, Esteban	137	Qin, Haipeng	345
Paydarfar, David	336	Quarteroni, Alfio	4
Peace, Aaron	136	Quintana-Morales, Pedro	354
Peeters, Ralf	285	Rajagopalan, Cadathur	215
Pelaez Coca, María Dolores	283	Rajpurkar, Pranav	167
Pelaez Coca, Maria Dolores	282	Ramesh, Nadarajah	317
Pelayo, Sara	6	Ramlugun, Girish	108
Peng, Yi	90	Ramos, Javier	240, 255
Peralta, Elena	206	Ramhrez, Julia	223, 226
Peraza, Diego A.	64	Ranucci, Marco	279
Perekrestenko, Dmytro	70	Ranuzzi, Giovanni	1, 204, 279
Pérez, Juan J.	145	Räsänen, Esa	151, 208
Perka, Anna	340	Rauwolf, Thomas	216
Perpican, Gilberto	148	Ravelo-García, Antonio G.	354
Petrénas, Andrius	49, 51	Razeghi, Orod	47
Petrov, Ivo	16	Redheuil, Alban	78, 80, 192
Pecaranda, Angelina	310	Redmond, Stephen	367
Pfeiffer, Micha	125	Renna, Francesco	184
Pham, Thuy	363	Renu, Estefania	309
Pilia, Nicolas	125, 267	Requena, Jesus	75
Pimentel, Marco A F	365	Rezaei, Shahab	115, 158, 318, 322, 323
		Rice, John J	62

Richards, Dylan	177	Santabárbara, Jose Manuel	79
Richter, Yvonne	35	Santana, Silvina	373
Ricoy Castro, Minia	262	Sanz, Alberto Hernando	266
Rieta, José J....111, 112, 193, 203, 238, 257, 342, 343		Sanz, Jorge	79
Ringborn, Michael	268	Sapp, John L.	41
Riso, Giovanni	81	Sassi, Roberto	62, 224, 383
Rivolta, Massimo	224	Sattari, Mohammad	110
Rivolta, Massimo W	62	Saunders, Kate	321
Rizwan, Muhammed	175	Sayer, Gabriel	188
Rizzatti, Fabiola	235	Sbrollini, Agnese.... 85, 221, 237, 239, 334, 337	
Rochette, Michel	144	Scarpini, Giorgio	52
Ródenas, Juan	111, 112, 343	Scebba, Gaetano Claudio	368
Rodrigo, Miguel 2, 18, 75, 116, 228, 377		Schäffer, Benjamin	378
Rodriguez, Blanca.....2, 18, 230, 251, 253, 311		Schaufler, Anna	135
Rojo-Alvarez, Jose Luis.104, 199, 209, 269		Schipper, Fons	50, 273
Romero, Daniel	205, 308	Schindwein, Fernando	195, 197
Roney, Caroline	379	Schmeisser, Alexander	216
Ronzhina, Marina	150, 173, 295	Schmid, Ramun	88, 176, 299
Rose, Georg	132	Schmidt, Marcus	132
Rose, Kevin	177	Schmidt, Samuel Emil	25, 26, 141
Rosenberg, Aviv	165	Schnell, Frederic	36
Roses, Eduardo	106	Schoenenberger, Yann	142
Rosiński, Jacek	340	Schotten, Ulrich	196, 285
Rossato, Gianluca	204	Schreier, Günter	169
Rottbauer, Wolfgang	260	Schuler, Steffen	247
Roy, Aditi	33	Schulz, Steffen	262
Rubel, Paul	301	Schulze, Walther	77
Rubin, Jonathan	160	Schwab, Patrick	368
Ruda, Jana	150	Scilingo, Enzo Pasquale	157
Ruiz de Gauna, Sofia	5, 6, 8	Sclocco, Roberta	153
Ruiz, Jesus	5, 6, 113	Sebastian, Rafael	316
Russell, James K	6, 113	Seemann, Gunnar	35, 385
Rymko, Joanna	340	Seiei Uehara Tamashiro, Daniel	293
Sadowiec, Marta	296	Serinagaoglu Dogrusoz, Yesim	186
Sadr, Nadi	363	Serinağaoğlu Doğrusöz, Yeşim	55
Safatly, Lise	178	Setarehdan, Seyed Kamaledin	290
Sager, Sebastian	216, 362	Setianto, Febrian	126
Saiz, Javier	122, 123	Severeyn, Erika	148
Saiz, Purificación	6	Severi, Stefano 17, 45, 64, 120, 121, 194, 241, 381	
Salamon, Judyta	155	Shang, Junyuan	179
Salar-Alcaraz, Mariela	269	Shao, Minggang	345
Salinet, João	197, 303	Shariati, Shahrzad	291
Salinet, Joro	53, 195	Sharma, Ashish	352
Sampedro Puente, David Adolfo	252	Shi, Cheng	357
Sampedro-Puente, David Adolfo	60	Shi, Hongyu	319
Sanchez de la Nava, Ana Maria	146	Shih, Tsai- weng	139
Sánchez, José	356	Shimabukuro Marchini, Gustavo	293
Sandberg, Frida	51, 119, 288	Shirkovskiy, Pavel	24
Sands, Gregory	105, 108	Shlapunov, Alexander	77
Sanromán-Junquera, Margarita	104	Silva, Ikaro	65

Simarro, Elena	106
Simarro-Mondejar, Elena	344
Simon Chica, Ana	18
Simon, Antoine	46
Simov, Dimitar	371
Simov, Dimiter	16
Simova, Iana	11, 16, 176, 371
Sison, Shiloh	274
Sitarek, Michał	297
Skillen, Micheal	277
Smaill, Bruce	105, 108
Smital, Lukáš	173
Smoleń, Dawid	68
Smrček, Radovan	173
Soguero-Ruiz, Cristina	240, 255
Solano-Quinde, Lizandro	37
Soliński, Mateusz	281, 340
Sološenko, Andrius	49
Solovyova, Olga	229, 292
Soor, Navjeevan	213
Sopic, Dionisije	346
Sopov, Oleg	229
Sørensen, Kasper	384
Sørensen, Peter L	218
Soriano, Diogo	197
Sornmo, Leif	51, 268, 288
Sörnmo, Leif	49
Soulat, Gilles	78, 80, 192
Speidel, Stefanie	125
Spence, Mark S	138
Srinivasan, Neil	222
Stafford, Peter	195, 197
Starc, Vito	244
Stark, Tibor	150
Stępień, Katarzyna	360
Stijnen, Marco	59, 210, 315
Stiles, Martin	66
Stoyanov, Todor	348
Stracina, Tibor	150, 295
Stranieri, Andrew	118
Strazza, Annachiara	334
Struijk, Johannes	25, 26, 141, 218, 384
Su, Jianwei	215
Su, Yi	191, 289
Suarez, Alexander	92
Such, Luis	107, 313
Such-Miquel, Luis	107
SUN, Zehui	215
Sundnes, Joakim	20
Suresha, Pradyumna B	162
Suárez-Gutiérrez, Víctor	248
Svehlikova, Jana	58

Swenne, Cees A	244, 294
Sánchez, Carlos	283
Sánchez, Jorge	122
Swrensen, Kasper	25, 26
Swrensen, Peter L	384
Tabatabaei Balaei, Asghar	363
Taggart, Peter	39, 222, 280
Taki, Arash	30, 291
Tan, PJ	59, 210, 315
Tan, Ru San	191, 289
Tang, Hong	307, 331
Tang, Rui	363
Tanner, Hildegard	243
Tao, Susumu	42
Tareh, Asghar	83
Tate, Jess	375, 376
Tavakolian, Kouhyar	25, 26, 332, 333
Teijreiro, Tomas	166
Teo, Soo Kng	191, 289
Testelmans, Dries	234, 242, 275
Thomas, Sonia	114
Tobon Gomez, Catalina	47
Tobon, Catalina	123
Tolkacheva, Elena	32
Tomasi, Corrado	4, 45
Tomassini, Selene	334
Tonon, Davide	204
Toosizadeh, Nima	322
Tormos, Alvaro	106, 107
Tornekar, Rupali	94, 95
Torney, Hannah	7
Tousoulis, Dimitrios	372
Travers, Colm	336
Tremblay, Malcom	333
Trenor, Beatriz	122, 250
Trifanova, Maria	292
Trucco, Emanuele	138
Trukshina, Maria	292
Tsao, Hsuan-Ming	190
Tschannen, Michael	70
Tsouri, Gill	48
Tuan, Jiun	197
Tysler, Milan	58
Tziakouri, Maria	351
Ugarte, Juan P	123
Ukil, Arijit	174
Uriel, Nir	188
Ushenin, Konstantin	229
Uzelac, Ilija	198
Vagni, Marica	221
Vagos, Marcia	20
Vaida, Pierre	81

Valenza, Gaetano	153, 157	Warren, Stafford.....	268
Valenzuela, Carmen	64	Warrick, Philip	161, 264
Valinoti, Maddalena.....	194, 381	Weber, Gerhard Wilhelm	55
Vallecilla, Carolina.....	45	Weber, Giovanni	303
Vallee, Fabrice	326	Weber, Tobias.....	216
van Dam, Eelco	300	Wei, Shoushui	331
van Dam, Peter	227, 300	Weinert, Lynn	188
Van de Vel, Anouk	259	Weynans, Lisl.....	76
Van der Velde, Enno T.	294	Wheeler, Kayleigh.....	232
van Duijvenboden, Stefan	222, 280	Whitaker, Bradley.....	175
Van Huffel, Sabine.....	15, 92, 234, 242, 259, 266, 275, 355	Whitaker, John.....	47
van Hunnik, Arne.....	196	Whitsed, Rachel	329
Vanheusden, Frederique	195	Wilders, Ronald.....	17, 21, 120, 121
Vanjara, Nihar	358	Willems, Stephan.....	378
Varanini, Maurizio	98, 347	Williams, Steven	202
Varela, Marta.....	33, 380	Winther, Simon	141
Varon, Carolina.....	92, 234, 242, 259, 266, 275	Wolf, Klaus-Hendrik.....	27
Vazquez Seisdedos, Carlos R.....	92	Wong, Sara.....	37, 148
Veintemillas, Jose F.....	8, 113	Wu, Meng.....	179
Verkerk, Arie O.....	17	Wu, Shuicai	345
Verma, Ajay.....	25, 26, 332, 333	Wulan, Naren	211
Vernooy, Kevin	44	Wülfers, Eike M.....	385
Vesin, Jean-Marc.....	67, 142, 287, 341	Xia, Ling.....	314
Vigmond, Edward.....	231, 379	Xia, Yirong.....	319
Viik, Jari.....	10, 151	Xia, Yong	181, 182, 211, 312
Villard, Benjamin.....	230	Xie, Junqing.....	179
Villegas, Ricardo	71	Xiong, Zhaohan.....	66
Virag, Nathalie	341	Xu, Da.....	332, 333
Viscor, Ivo.....	369	Xu, Wenlong	314
Vitek, Martin.....	173	Yagüe, Jaime	106
Vives-Gilabert, Yolanda.....	79	Yagüe-Mayans, Jaime	344
Vizcaya, Pedro	72	Yagъe-Mayans, Jaime	117
Vlachothanasi, Stavroula.....	324	Yamat, Megan	188
Volders, Paul	44, 74, 245, 374	Yanar, Erdem	186
Vollmer, Marcus.....	183, 214, 350	Yang, Licai	319
Voss, Andreas.....	262	Yaniv, Yael.....	165, 171
Vullings, Rik.....	50	Yazdani, Sasan	67, 287, 341
Vy, Phuoc.....	144	Yazdchi, Mohammadreza	327
Vллллнen, Heikki.....	359	Ye, Wenyu.....	215
Wadehn, Federico	325	Zabihi, Morteza	69
Wallman, Mikael.....	119	Zacur, Ernesto	230
Walser, Dario	325	Zanetti, John	25, 26
Walter, Marian.....	168	Zareba, Wojciech	382
Wang, Chun-Li	86	Zarrabi Rad, Ali Asghar	187
Wang, John.....	258	Zarrin, A.J.....	361
Wang, Kuanquan.....	181, 182, 211, 312	Zarzoso, Manuel.....	106, 107
Wang, Linwei	41, 42, 57, 358, 375	Zarzoso, Vicente.....	87
Wang, Qingyun.....	179	Zavantis, Dimitrios	89
Wang, Ruixuan.....	138	Żebrowski, Jan.....	12, 154, 281
Wang, Zhigang.....	90	Zeemering, Stef	196, 285
		Zeile, Clemens.....	216, 362
		Zemzemi, Nejib.....	63

Zhan, Ping.....	90	Zhong, Liang.....	191, 289
Zhang, Henggui.....	181, 182, 211, 312	Zhou, Yuxi.....	179
Zhang, Jia	368	Zhuang, Yuan	319
Zhang, Wenjie	256	Zihlmann, Martin.....	70
Zhang, Zhengguo.....	90	Zimik, Soling.....	34
Zhao, Jichao.....	66, 105, 108	Zlochiver, Sharon	109
Zhao, Lina	331	Zorio, Esther.....	79
Zhao, Xiao Dan.....	191, 289	Żyliński, Marek.....	296
Zheng, Dingchang.....	328	Blvarez, Pedro	356
Zheng, Yi.....	128		

