quantitative analysis and diagnostics, predictive and therapeutic values

KARLSRUHE, GERMANY · 22.–24. OCTOBER 2015

// Physicians meet Engineers //
Dear colleagues,

Research and development has brought many significant advances to electrophysiological examinations of the atria during the last years. Electroanatomical mapping systems reduce radiation, multichannel catheters allow for simultaneous high density mapping, and computer modeling enhances comprehension of signal generation and the mechanisms of arrhythmias. But despite this, atrial fibrillation (AFib) still poses a major challenge for clinicians.

A joint collaboration of all experts - clinicians and engineers - has the best chance of coping with this challenge. This is the goal of our workshop - bringing together the leading experts from these areas, and to provide a stage for open discussion.

**Topics of the workshop include:**
- Mapping of arrhythmias in clinical practice
- Mechanisms of AFib initiation and maintenance
- Signal analysis from engineers’ and clinicians’ perspective
- Strategies for ablation
- Atrial modeling to enhance comprehension of arrhythmias

Distinguished experts are invited to participate as speakers, and as panelists, in order to find common insights, debate theories, and discuss promising and controversial approaches.

The workshop is organized by the collaboration of the Institute of Biomedical Engineering (IBT) and the Städtisches Klinikum Karlsruhe, two renown institutions in the field of atrial modeling, signal processing and medical care. The Institute of Biomedical Engineering is part of the Karlsruhe Institute of Technology (KIT), a well-known University specializing in engineering. For over 15 years, research in cardiac modeling and biomedical signal processing has been the focus of IBT, making it a renowned member of the international research community. The cooperation with the Städtisches Klinikum Karlsruhe, a clinical partner for nearly a decade, has led to dozens of conference contributions and journal articles, addressing issues of engineering interest and clinical importance.

The beautiful city of Karlsruhe will form the setting for the meeting, which takes place in the year of its 300th birthday. Karlsruhe can be reached easily by train and international airports (Frankfurt a. M. is only one hour by direct train connection away!).

**Looking forward to meeting you in Karlsruhe,**

Prof. Dr. med. Claus Schmitt

Prof. Dr. rer. nat. Olaf Dössel
General information
The workshop “Atrial Signals 2015” addresses a broad expert audience of various backgrounds with interest in AFib in different sessions. All oral presentations will be given by invited speakers and intensively discussed by named experts. There is possibility for participants to present own contributions in a poster session on Friday.

Registration for the scientific program (Thursday & Friday)
Registration is required to participate in the scientific sessions on Thursday and Friday. Registration fee is 250 Euro after August 1st. There is no student discount.

Registration for the medical program (Saturday)
Participation in the medical program on Saturday is free of charge. However, pre-registration is highly appreciated.

Registration for the engineering program (Saturday)
Participation in clinical engineering program on Saturday is open for registered participants.

Process of registration
Registration can be done online via the conference website. Please note that availability is limited.

Questions related to registration
Please contact Mrs. Treiber for assistance regarding registration:
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Register here:
www.atrial-signals.kit.edu
Thursday, 22nd October 2015

**Block 1: What is driving atrial fibrillation (AFib)?**
- 08:00 – 08:30 h » Catheter ablation of AFib – Where are we now? Claus Schmitt
- 08:30 – 09:00 h » What can animal models teach us about the initiation and perpetuation of AFib Ulrich Schotten
- 09:00 – 09:30 h » Ionic mechanisms of AFib Reza Wakili
- 09:30 – 09:50 h Coffee Break
- 09:50 – 10:10 h » What can we learn from computer modeling of AFib? Olaf Dössel
- 10:10 – 10:30 h » Role of sympathetic innervation in AFib Sabine Ernst
- 10:30 – 10:50 h » Fibroblasts and Cardiac Electrophysiology Peter Kuhl
- 10:50 – 11:30 h Panel discussion
  - Which mechanisms are crucial and which models are suitable to solve the puzzle of AFib?
  - Moderator: Claus Schmitt · P1: Ulrich Schotten · P2: Olaf Dössel · P3: Martin Berggren · P4: Reza Wakili · P5: Sabine Ernst · P6: Peter Kuhl
- 11:30 – 12:00 h Lunch Break

**Block 2: Mapping Techniques**
- 13:00 – 13:20 h » One fits all? Catheters and their Capabilities to characterize AFib Thomas Arzentz
- 13:20 – 13:40 h » Mapping Techniques in AFib Julian Chun
- 13:40 – 14:00 h » Recording Electrograms without losing information Mein-Tal Bar-Tal
- 14:00 – 14:20 h » Hunting for ghosts: Pitfalls and potential misinterpretations of atrial electrograms Nick Linton
- 14:20 – 15:00 h Panel discussion
  - What are the essentials in recording of stable and unstable activation patterns of AFib?
  - Moderator: Thomas Arzentz · P1: Mein-Tal Bar-Tal · P2: Nick Linton · P3: Jürgen Schrieck · P4: Julian Chun
- 15:00 – 15:20 h Coffee Break

**Block 3: Substrate mapping and CFAE**
- 15:20 – 15:40 h » Analysis and impact of atrial fibrosis on AFib Nassir Marrouche
- 15:40 – 16:00 h » What precisely is a „complex fractionated electrogram“? And what does it really tell us? Maurits Allessie
- 16:00 – 16:20 h » Quantitative Analysis and Characterization of CFAE. How does it help for Ablation? Edward J. Caccio
- 16:20 – 16:40 h Coffee Break
- 16:40 – 17:00 h » Seeing is knowing – Analysis and Visualization of Atrial Signals Tobias Deisterlein
- 17:00 – 17:20 h » Are CFAEs more than reading tea leaves? Isabel Diesenhofer
- 17:20 – 18:30 h Panel discussion
  - How can we define an AFib Substrate and what are CFAEs all about? What’s based on Evidence?
  - Moderator: Isabel Diesenhofer · P1: Nassir Marrouche · P2: Koslawee Nademanee · P3: Edward J. Caccio · P4: Tobias Deisterlein · P5: Heidi Ender
- 18:30 – 19:30 h Poster Session

Friday, 23rd October 2015

**Block 4: Rotors and spiral activations**
- 08:00 – 08:30 h » So far I could not find a single Rotor during longstanding human AFib Maurits Allessie
- 08:30 – 09:00 h » The Rotor Revolution? – How to modify the Substrate Hans Kottkamp
- 09:00 – 09:30 h » Are Rotors driving AFib? Is every AFib driven by Rotors? What’s based on Evidence? Sanjiv Narayan
- 09:30 – 09:50 h Coffee Break
- 09:50 – 10:20 h » Localization and Ablation of Rotors – is this the solution to all problems? Michael Hahnloser
- 10:20 – 10:40 h » Invasive and noninvasive Mapping – are the patterns related? Thomas Denke
- 10:40 – 11:00 h » Challenges in detection and visualization of Rotors and unstable conduction Patterns Pawel Kuklik
- 11:00 – 12:00 h Panel discussion
  - How to detect Rotors? Is every Rotor driving AFib?
  - Moderator: Armin Luca · P1: Michael Hahnloser · P2: Hans Kottkamp · P3: Sanjiv Narayan · P4: Michel Haissaguerre · P5: Thomas Denke · P6: Pawel Kuklik · P7: Thomas Rostock · P8: Omer Bermanfeld
- 12:00 – 13:30 h Lunch Break
- 13:30 – 15:00 h Poster Session

**Block 5: What do we have, what do we need?**
- 15:20 – 15:40 h » Optical-Electrical Mapping in AFib: Developments, Strengths and Pitfalls Omer Bermanfeld
- 15:40 – 16:00 h » Welcome to 2020: Catheter Ablation guided by Computer Models – fiction or real life? Olaf Dössel
- 16:00 – 16:20 h » Wishes and Desire – Hardware and Software Armin Luca
- 16:20 – 16:40 h » Which Studies can verify current Theories? What do we need for that? Olaf Dössel
- 16:40 – 17:15 h Panel discussion
  - Which Studies can verify current Theories? What do we need for that?
  - Moderator: Olaf Dössel · P1: Douglas Packer · P2: Armin Luca · P3: Irene Jander · P4: Omer Bermanfeld · P5: Dieter Thomas · P6: Reza Wakili · P7: Rob MacLeod

Saturday, 24th October 2015

**FOCUS SESSION: KARDIOLOGIE**

**Session 1: Antikoagulation**
- 08:30 – 09:00 h » ASS bei Vorhofflimmern: Feigenblatt für den Arzt, Balsam für den Patienten? Bernd Waldecker
- 09:00 – 09:30 h » Neue direkte orale Antikoagulanten (DOAK): Hat Marcumar ausgedeutet? Wolfgang Schöls
- 09:30 – 10:00 h Vorhofflimmern und akutes Koronsyndrom Meinrad Gawaz
- 10:00 – 10:30 h Kaffeepause

**Session 2: Vorhofflimmern**
- 10:30 – 11:00 h » Antiarrhythmika bei Vorhofflimmern: gibt es was Neues? Christian Wolpert
- 11:00 – 11:30 h » Vorhofflimmerverschluss (LAA Occluder): Alternative zur Anti - koagulation? Juraj Melicherek
- 11:30 – 12:00 h Vorhofflimmernablation: Welche Technik ist zu favorisieren? Armin Luca
- 12:00 – 13:30 h Mittagessen

**Session 3: Antikoagulation**
- 13:30 – 14:00 h » Einsatz von Betablocker: Hat sich was geändert? Ralf Zahn
- 14:00 – 14:30 h » Digitalis: Ja oder nein? oder doch? Rainer Wondraschek
- 14:30 – 15:00 h » Schlaganfall und Vorhofflimmern: Was bringen die implanterbaren Event-Rekorder? Martin Karck
- 15:00 – 15:30 h Metabolisches Syndrom und Vorhofflimmern: PCSK9-Anti-körpertherapie zur Lipidsenkung Florian Willecke

**FOCUS SESSION: MEDICAL ENGINEERING**

**Session 1: Bridging the gap between computational modeling and clinical data**
- 08:00 – 08:50 h » Simplify and speed up! But are we still realistic? Vincent Jacquemet
- 08:50 – 09:10 h » In-silico drug testing for AFib – always 5 years from now? Alfonso Bueno-Orovio
- 09:10 – 09:30 h » Registration in the EP-lab in real time Kawai Rhode
- 09:30 – 09:50 h » How many ionic models do we need for modeling of the atria? Molly Malvarez
- 09:50 – 10:10 h » How far are we from patient-specific atrial modeling? Gunnar Seemann
- 10:10 – 10:40 h Requirements and Possibilities in modeling of Clinical Data
  - Moderator: Gunnar Seemann · P1: Vincent Jacquemet · P2: Alfonso Bueno-Orovio · P3: Molly Malvarez · P4: Kawai Rhode
- 10:40 – 11:00 h Coffee Break

**Session 2: Uncovering all what’s hidden in biosignals of the atria**
- 11:00 – 11:20 h » Advanced processing of atrial intracardiac signals – get more out of the data Juan Roberto Martinez
- 11:20 – 11:40 h » HR and Blood Pressure Variability during AFib Luca Mainardi
- 11:40 – 12:00 h » Extracting Atrial Information from Surface Signals of poor Quality Last Sarmo
- 12:00 – 12:20 h Targeted ablation of AFib: what can intracardiac signal analysis teach us? Flavia Reville
- 12:20 – 13:00 h Challenges and Goals in processing of Atrial Electric Signals
  - Moderator: Omer Dössel · P1: Juan Roberto Martinez · P2: Luca Mainardi · P3: Last Sarmo · P4: Flavia Reville

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The workshop Atrial Signals 2015 will take place in the most prestigious part of the Karlsruhe Palace, the Gartensaal. Built in 1715 as residence of the Margrave, the Palace served for 200 years as the seat of government of the Baden dynasty. Since 1921, the former residence houses the Baden State Museum.

The Palace is located at the northern end of the city center, linking the downtown area and adjacent recreational area Hartwald.

» Schloss Karlsruhe, Schlossbezirk 10, 76131 Karlsruhe

The focus session of Engineering on Saturday will take place in the adjacent HECTOR auditorium, which is the central lecture hall of the KIT International Department.

» HECTOR Hörsaal, Schlossplatz 19, 76131 Karlsruhe

Source: Städtisches Klinikum Karlsruhe gGmbH, Moltkestrasse 90, 76133 Karlsruhe