



# STAFF/MALT #17

September 1–4, 2021

Hotel Monteconero\*\*\*,  
Badia San Pietro  
Via Monteconero 26 –  
60020 Sirolo (AN)  
Italy

<http://staff-malt-meetings.net/>

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# Sponsors

STAFF/MALT 2021 Organizing Committee would like to thank the following partners that supported the meeting:



*BR3IN*



# Welcome to STAFF/MALT 2021

*A warm welcome to all participants this year.*

*We are trusting that the Delta variant will stay well away from Sirolo this September!*

*The Symposium will include participants from more than 10 countries and this will be the 17th meeting of both STAFF and MALT, which have now become combined in STAFF/MALT with the common link being the interface of the electrocardiogram from a focus on ischemia (STAFF) and imaging (MALT).*

*Mentoring of young investigators and collaboration between researchers across international boundaries and between different disciplines have been guiding principles of both STAFF and MALT, fostered by keeping the Symposium invitational and limited in the number of participants.*

*The Planning Committee this year has risen to the challenge of a hybrid approach with remote participation by the few who unavoidably cannot participate in person.*

*We are looking forward to an excellent program in an idyllic setting!  
Enjoy....*

**Staff Warren, MD, FACC**

*Dear Colleagues and Friends,*

*On behalf of the Local Organizing Committee, it is an honor for me to welcome you to the 17th STAFF-MALT 2021 meeting. Unfortunately, we are still fighting the Covid-19 pandemic and, for some of us, this meeting is the first one in presence after almost two years; it symbolizes a new beginning! Hopefully, little by little, we will all return to a normal life and have the possibility to travel and meet again. But for the time being, technology will help us to overcome the distance with those of you who participate remotely. We will do our best make you feel as if you were here!*

*The meeting is located in Sirolo at the Monteconero Hotel. On the top of the Conero promontory, at 550 m high, the Hotel Monteconero enjoys an enchanting position overlooking the Adriatic Sea and the rolling hills of the Marche region. Housed in a Camaldolese abbey of 1100, the hotel preserves its ancient external structure intact, in which the Romanesque church of San Pietro al Conero is inserted. The most nearby larger city is Ancona, a historical city where Università Politecnica delle Marche (UNIVPM) is located. UNIVPM includes faculties of Medicine and of Biomedical Engineering, to which the Local Organizing Committee belongs, and where prof. Cees Swenne from the STAFF steering committee, has been visiting professor for 4 years. At about one-hour driving there is Fermo, another very ancient city that is also my home-town. We will visit Fermo during the social event and I am sure you will be astonished by the beauty of its monuments and natural sights.*

*I wish you all will enjoy the meeting!*

**Laura Burattini, PhD**

*Associate Professor of Biomedical Engineering*

*President of the Unified Council of the Biomedical Engineering Degree*

*Università Politecnica delle Marche*

*Dipartimento di Ingegneria dell'Informazione*

*Via Brecce Bianche 12,60131 Ancona*

# Venue



The STAFF/MALT 2021 Symposium is held in the Monteconero Hotel, Via Monteconero 26 – 60020 Sirolo (AN), Marche, Italy.

In the past this hotel was a monastery, named San Pietro. Since the 10<sup>th</sup> century the beauty

and tranquility of Monteconero have attracted men inclined towards meditation and reflection. The first records of St. Peter's Abbey date back to 1038 when the church was given by the Conti Cortesi of Sirolo to a Benedictine monk to enable him to build a monastery. In 1203 the first cloister was added to the church. Unfortunately, the peace and quiet of the area were often broken by fighting between different religious communities. In 1558 a fire, probably started deliberately, destroyed a large part of the church and the monastery. The Camaldolites began the work of restoration and it was in 1561 that they first settled into the refurbished abbey. In 1864 the Camaldolites had to abandon the hermitage when it was expropriated by the state. The Commune of Sirolo took over, handing the monastery over, firstly to the Marchetti family and then to the Soderini Caraffa d'Andria. In 1932 the part of the complex still belonging to the Commune was rented to the Melappioni family who opened their restaurant business. In 1958 the Melappioni family bought the entire complex and transformed it into an elegant hotel. For over three generations the family has run the hotel, which, furnished with every comfort, still preserves the allure of the ancient abbey.

The nearest larger city is Ancona, a historical city dating from 387 B.C., where you can also find the Università Politecnica delle Marche (UNIVPM), that includes faculties of Biomedical Engineering and Medicine and where the local organizing committee is affiliated.



# Practical Information

## MONEY/CURRENCY

In Italy, the currency is the Euro. Credit cards (Mastercard and Visa) are accepted in shops, hotels, and restaurants.

## EMERGENCY PHONE NUMBERS

Medical Emergency and Ambulance: 118

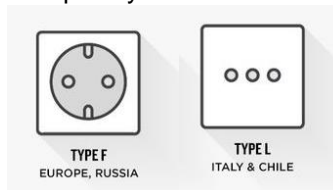
The Pan-European Emergency Number (Carabinieri): 112

A.C.I. (Italian Automobile Club) Road Assistance: 116

Fire Department: 115

## ELECTRIC STANDARDS

In Italy, the power plugs and sockets are of type F and L. The standard voltage is 230 V and the standard frequency is 50 Hz.



## LANGUAGE

The official language in Italy is Italian. English is not very widely spoken overall in Italy, although there is a reasonable prevalence of English speakers in larger cities like Rome, Florence and Milan or in holiday destinations.

## TIME ZONES

Italy has only 1 time zone. Central European Summer Time (CEST) is observed when Daylight Saving Time (DST) is in force (UTC +2).

## MOBILE PHONES

Mobile Phones use GSM technology with frequencies between 900-1800MHz. For Europeans, when you travel outside your home country to another EU country, you do not have to pay any additional charges to use your mobile phone. The same rule also applies to any calls or text messages received while you're abroad - you won't be charged extra to receive calls or texts while roaming, even if the person calling you is using a different service provider. The international telephone country code for Italy is +39.

# Regulations in Italy

## #StaySafe

### OBLIGATION OF FACE MASK AND DISTANCING



Wearing a face mask is always mandatory in indoor public places throughout Italy. Masks are no longer mandatory outdoors, but you must always carry one with you and wear it in case of crowded conditions (no possibility to maintain 1-meter safety distance). Children (under 6-years-old) and people with disabilities are not required to wear masks. It is mandatory to keep 1-meter safety distance and to frequently wash hands (if not possible, you can sanitize hands using alcohol-based sanitizing gels). Sanitizing gel dispensers are mandatory in the entrances to shops, restaurants and other businesses. In all indoor locations of Monteconero Hotel, wearing a face mask is mandatory.

### TRANSPORT

Public transport can operate with 50% of non-cohabiting passengers. Travelling by car with cohabitants is possible without limitations. Travelling by car can operate with 50% of non-cohabiting passengers (driver included). Everyone in the car must wear a mask. The passenger seat next to the driver must remain free. Passengers must sit on opposite sides of the rear seat leaving the center seat free. If the car has several rear rows, it can accommodate a maximum of two passengers per row seated on opposite sides of the seat, leaving the center seat free.



## ACTIVITIES

In Italy, from August 6<sup>th</sup>, 2021 everyone over the age of 12 must present the EU Digital COVID Certificate or an equivalent certificate issued by the health authorities of non-EU country members to access services and activities (Restaurants; Museums and places of culture; Swimming pools; Congresses; Spas and fitness centers; and others).

Coffee shops and restaurants are open. They must indicate the maximum number of people allowed inside. Consumption at the table is always allowed. There is no limit to the number of people who may sit at the same outdoor table. Up to a maximum of 6 non-cohabiting people may sit together indoors; there are no limits to the number of people for 2 families who decide to dine together at the same table.



Access to free beaches and equipped beaches is allowed. Beach resort facilities may request reservations to access beaches. Measurement of body temperature is envisaged at the entrance. Each beach umbrella must have a free space of at least 10 square meters around it. The minimum distance between each sun lounger must be at least 1.5 meters. Individual sports such as beach tennis, swimming and surfing are allowed, provided that social distancing is observed. Masks are mandatory in common areas (bars, restaurants, etc.) as well as indoors.

The shops shall remain open and must display a sign indicating the maximum number of people allowed inside. Museums and other cultural institutions are open, but booking online or by telephone is required.



## TESTING FACILITIES

Near the Hotel Monteconero, there are two pharmacies able to provide formally recognized results of COVID-19 testing. They are:



**FARMACIA TURANO**

Via San Francesco, 2/B

60020 Sirolo (AN), Phone: (+39) 0719331597

**FARMACIA SAN GIOVANNI**

Via Papa Giovanni XXIII, 27

60021 Camerano (AN) Phone: (+39) 071 95226

# Program

## Wednesday, September 01, 2021

15.00 - 18.00	Arrival and check-in at the Monteconero Hotel
18.30	Welcome Aperitif at Monteconero Hotel
20.00	Dinner at Monteconero Hotel

## Thursday, September 02, 2021

7.30 - 8.15	Breakfast
8.30 - 8.45	<b>Welcome:</b> Staff Warren, Annapolis, Maryland, USA, and Laura Burattini, Ancona, Italy
8.45 - 9.45	<b>Session 1: Automatic Detection and Clinical Significance of ECG Alternans</b> <b>Co-chairs: Laura Burattini and Pablo Laguna</b>
9.45 – 10.15	<b>Session 2: How Can Big Data Impact ECG Diagnosis</b> <b>Co-chairs: Tom Ribeiro and Agnese Sbrollini</b>
10.15 - 10.45	Coffee break
10.45 - 11.15	<b>Session 2: How Can Big Data Impact ECG Diagnosis</b> <b>Co-chairs: Tom Ribeiro and Agnese Sbrollini</b>
11.45 - 12.45	<b>Session 3: Imaging</b> <b>Co-chairs: Henrik Engblom and Stafford Warren</b>
12.45 – 13.30	Lunch
13.30 - 22.00	<b>Social event:</b> guided visit to the city of Fermo.

**Friday, September 03, 2021**

7.30 - 8.15	Breakfast
8.30 - 10.00	<b>Session 4: Ischemic heart disease</b> <b>Co-chairs: Cees Swenne and Olle Pahlm</b>
10.00 - 10.30	Coffee break
10.30 - 12.00	<b>Session 4: Ischemic heart disease</b> <b>Co-chairs: Cees Swenne and Olle Pahlm</b>
12.00 - 13.00	<b>Session 5: Atrial Fibrillation: Imaging and Signal Processing</b> <b>Co-Chairs: Pyotr Platonov and Pablo Laguna</b>
13.00 – 14.00	Lunch
14.00 - 15.30	<b>Session 6: Miscellaneous ECG related topics</b> <b>Co-chairs: Laura Burattini and Olle Pahlm</b>
15.30 - 16.00	Tea break
16.00 - 17.30	<b>Session 6: Miscellaneous ECG related topics</b> <b>Co-chairs: Laura Burattini and Olle Pahlm</b>
17.30 – 18.00	Future directions for STAFF/MALT Meetings Discussion moderated by Staff Warren
20.00	Gala dinner

**Saturday, September 04, 2021**

From 7.30	Breakfast
	Check-out and departure

# Social Event

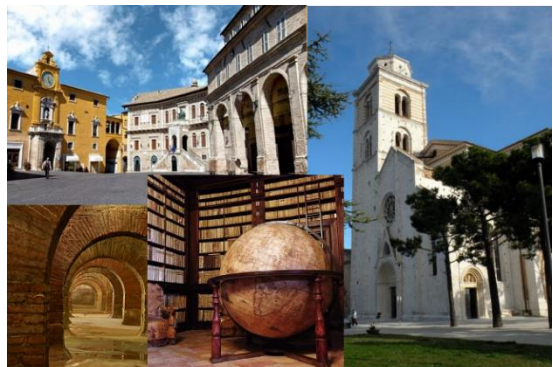


The Social event (**September 02, 2021**) will take place in Fermo, a town of Marche region. Fermo is on a hill, the Sabulo, elevation 319 meters (1,047 ft). The vocation of Fermo, with its history as a city of learning and its tradition as a center of cultural

exchange on the Adriatic, has always been to offer a welcome and hospitality. The instruments that the City has on hand to continue to fulfil this mission are many and have been consolidated and refined over time.

## PROGRAM

- 13.15: Departure is from the Hotel Monteconero. The Hotel will provide a lunch bag.
- 14.30: Arrival in Fermo
- 15.00: Meeting with the touristic guides at Largo Calzecchi Onesti. People will split into two groups that will visit the city of Fermo, specifically:
  - Piazza del Popolo;
  - City Theatre "dell' Aquila";
  - Palazzo dei Priori and the Globe room;
  - Roman cisterns;
  - The Metropolitan Cathedral.
- 19.00: Dinner at Fermo. We will have dinner at Girfalco chalet
- 21.00: Departure from Fermo (Arrival in Hotel Monteconero around 22.00)



# Scientific Program

Thursday September 02, 2021

8.30 - 8.45 **Welcome:** Staff Warren and Laura Burattini

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**Session 1: Automatic Detection and Clinical Significance of ECG Alternans**

**Co-chairs: Laura Burattini and Pablo Laguna**

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8.45-9.15 *Automatic identification of electrocardiographic alternans. Cases and applications*

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Ilaria Marcantoni, Università Politecnica della Marche

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9.15-9.45 *The role of repolarization alternans on the surface ECG: a mathematical model of TWA*

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Massimo W. Rivolta, Università degli Studi di Milano Statale

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**Session 2: How Can Big Data Impact ECG Diagnosis**

**Co-chairs: Tom Ribeiro and Agnese Sbröllini**

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9.45-10-15 *Monitoring heart rate variability and ECG changes in OSA patients through big-data analytics using PSG recordings*

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Daniel Romero, Université de Rennes

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10.15-10.45 Break

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10.45-11.15 *CODE - Clinical Outcomes in Digital Electrocardiology*

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Tom Ribeiro, Universidade Federal de Minas Gerais

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**Session 3: Imaging**

**Co-chairs: Henrik Engblom and Stafford Warren**

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11.15-11.45 *Novel CineECG enables anatomical 3D localization and classification of bundle branch blocks*

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Machteld Boonstra\*, Leiden University Medical Center

Tutor: Peter van Dam

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11.45-12.15 *Females have higher myocardial perfusion compared to males in patients with suspected chronic coronary syndrome – a Positron Emission Tomography study*

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Anna Szekely\*, Lund University

Tutor: Henrik Engblom

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12.15-12.45 *Resting advanced-ECG in stress-induced myocardial ischemia* Johan von Scheele\*, Stockholm University

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Tutor: Henrik Engblom

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\* **Young Investigator**

## Friday September 03, 2021

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### Session 4: Ischemic heart disease

#### Co-chairs: Cees A. Swenne and Olle Pahlm

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8.30-9.00 *Prognostic value of early ventricular arrhythmias in ST-elevation myocardial infarction treated by primary PCI: analysis of the VALIDATE-SWEADHEART trial*  
Marina Demidova, Lund University

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9.00-9.30 *Coronary collateral perfusion during acute balloon occlusion in the STAFF 3 study*  
Brandon Harris\*, Davidson College  
Tutor: Staff Warren

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9.30-10.00 *Unusual ECG observations in cardiac ischemia and beyond*  
Ton Gorgels, Maastricht University

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10.00-10.30 Break

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10.30-11.00 *ECG markers of acute melatonin treatment in a porcine model of acute myocardial ischemia*  
Olesya Bernikova\*, Syktyvkar State University  
Tutor: Jan Azarov

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11.00-11.30 *Combination of ECG parameters for prediction of ventricular tachyarrhythmias in STEMI*  
Ksenia Sedova, Czech Technical University

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11.30-12.00 *Moving dipole determination from 12-Lead ECGs can improve detection of acute myocardial ischemia*  
Vito Starc, University of Ljubljana

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### Session 5: Atrial Fibrillation: Imaging and Signal Processing

#### Co-Chairs: Pyotr Platonov and Pablo Laguna

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12.00-12.30 *QT adaptation to heart rate changes in AF patients*  
Alba Martin Yebra, Universidad de Zaragoza

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12.30-13.00 *Spectral F-waves index for automatic identification of atrial fibrillation*  
Agnese Sbröllini, Università Politecnica delle Marche

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13.00 –14.00 Break

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\* Young Investigator

Friday September 03, 2021

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**Session 6: Miscellaneous ECG related topics**

**Co-chairs: Olle Pahlm and Laura Burattini**

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14.00-14.30 Characterization of impaired ventricular repolarization by quantification of QT delay after heart rate changes in stress test

Cristina Perez\*, Universidad Zaragoza, Zaragoza

Tutor: Pablo Laguna

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14.30-15.00 An AI approach to R-peak detection and annotation  
Murat Sahin\*, Amatis, Heerenveen and Bakircay University

Tutor: Deniz Kilinc

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15.00-15.30 Early detection of emerging heart failure in post-myocardial-infarction patients using serial ECG analysis

Marjolein de Jongh\*, Leiden University Medical Center

Tutors: Cees A. Swenne and Agnese Sbröllini

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15.30-16.00 Break

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16.00-16.30 *Validation of the ventricular gradient*

Marielle Dik and Resi Schoonderwoerd\*, Leiden University Medical Center

Tutor: Cees A. Swenne

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16.30-17.00 *Vectorcardiographic analysis of cardiac electrophysiology in ischemic heart disease beyond the ST-segment*

Lennart Bergfeldt, University of Gothenburg

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17.00-17.30 *A heart age from the resting 10-second 12-lead ECG - validation compared to an existing heart age score from 5 minute high fidelity ECG*

Israel Palencia\*, Davidson College

Tutor: Staff Warren

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17.30-18.00 *Future directions for STAFFMALT Meetings*

Discussion moderated by Staff Warren

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**\* Young Investigator**

# Contacts

## Program chair

### Laura Burattini

Università Politecnica delle Marche (UNIVPM), Ancona, Italy,  
email: l.burattini@univpm.it

## Logistics and social program

### Agnese Sbrollini

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email: a.sbrollini@univpm.it

## Current members of the STAFF-MALT meetings organizing committee

### Stafford G. Warren

Anne Arundel Medical Center, Annapolis, United States

### Henrik Engblom

Lund University, Lund, Sweden

### Pablo Laguna

Universidad de Zaragoza, Zaragoza, Spain

### Olle Pahlm

Lund University, Lund, Sweden

### Pyotr Platonov

Lund University, Lund, Sweden

### Cees A. Swenne

Leiden University Medical Centre, Leiden, The Netherlands  
Università Politecnica delle Marche (UNIVPM), Ancona, Italy