

# The AMPS Insider

An AMPS LLC Magazine

The AMPS Insider is a quarterly magazine dedicated to all AMPS' partners and customers. Published by AMPS, it provides news and information about AMPS' products and initiatives.

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## Executive Overview

The next ISCE. The CineECG method explained. The Era of Smart Wearables. Product news. AMPS People.

## Editorial

After a three-year absence, the 46<sup>th</sup> Annual Conference of the International Society of Computerized Electrocardiology (ISCE) returns to a “live” conference and will take place April 6-10, at Henderson, NV. The conference program will cover different areas of cardiovascular research and technology. They include Acute Myocardial Ischemia, Consumer Electronics and ECG devices and Machine Learning in automated ECG analysis.

AMPS President and Chief Scientist Fabio Badilini, who also serves as Vice-President of ISCE, will attend and chair the session on Bedside Monitoring. More information about the conference is available from [www.isce.org](http://www.isce.org)

As you may remember from our TAI number 4 edition, AMPS is working to integrate the new CineECG method into CalECG. In the article: “*CineECG provides a novel anatomical view on the normal atrial P-wave*” published in the European Heart Journal of the European Society of Cardiology, you can learn the theory behind CineECG. The Abstract reads:

### Background

Novel CineECG computed from standard 12-lead ECG correlated the ventricular electric activity to ventricular anatomy. CineECG was never applied to

reconstruct the spatial distribution of normal atrial electric activity into an atrial anatomic model.

### Methods

From 6409 normal ECGs from PTB-XL database, we computed a median beat with fiducial points for P-and Q-onset. To determine the temporo-spatial location of atrial activity during PQ-interval, CineECG was computed on a normal 58-year-old male atrial/torso model. CineECG was projected to 3 major cardiac axes: posterior-anterior, right-left, base-roof, and to the standard cardiac 4 chamber, LAO and RAO views. Results In 6409 normal subjects, during P-wave, CineECG moved homogeneously from right atrial roof towards left atrial base ( $-54 \pm 14^\circ$  in four-chamber view,  $95 \pm 24^\circ$  ROA view). During terminal PQ-interval, the CineECG direction was opposite, moving towards left atrial roof ( $62 \pm 27^\circ$  in four-chamber view,  $78 \pm 27^\circ$  ROA view). We identified the deflection point, where the atrial CineECG changes in direction. The time from P-onset to deflection point was similar to P-wave duration.

### Conclusion

CineECG provided a novel 3D visualization of atrial electrical activity during the PQ-interval, relating atrial electrical activity to the atrial anatomy. CineECG location during P-wave and terminal PQ-interval were homogeneous within normal controls. CineECG and its deflection point may enable the early detection of atrial conduction disorders predisposing to atrial arrhythmias.

You will find the full article here:

<https://academic.oup.com/ehjdh/advance-article/doi/10.1093/ehjdh/ztac007/6527195>

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Another interesting article appeared on Frontiers in Cardiovascular Medicine, titled: “*Remote Cardiac Rhythm Monitoring in the Era of Smart Wearables: Present Assets and Future Perspectives*”. The article provides a very comprehensive panorama of the wearables devices available on the market. The abstract reads:

Remote monitoring and control of heart function are of primary importance for patient evaluation and management, especially in the modern era of precision medicine and personalized approach. Breaking technological developments have brought to the frontline a variety of smart wearable devices, such as smartwatches, chest patches/straps, or sensors integrated into clothing and footwear, which allow continuous and real-time recording of heart rate, facilitating the detection of cardiac arrhythmias. However, there is great diversity and significant differences in the type and quality of the information they provide, thus impairing their integration into daily clinical practice and the relevant familiarization of practicing physicians. This review will summarize the different types and dominant functions of cardiac smart wearables available in the market. Furthermore, we report the devices certified by official American and/or European authorities and the respective sources of evidence. Finally, we comment pertinent limitations and caveats as well as the potential answers that flow from the latest technological achievements and future perspectives.

You will find the full article here:

<https://www.frontiersin.org/articles/10.3389/fcvm.2022.853614/full>

## Products News

In the last quarter, our team has upgraded the options available with our most popular holter converter: HS2ISHNE. The new features include:

- Export of rhythm annotations
- Management of the spikes detected by the Mortara H12+ device
- Management of three new typology of paced beats: Ap (Atrial Pace), Vp (Ventricular pace) and Dual Pace (both Atrial and Ventricular).

Additionally, we have developed our latest version of CER-S (v4.4.) for the management of the paced beats with the capability to perform beat measurements in the beat-to-beat modality.

## AMPS People



*Simone Dolci*

Simone Dolci joined AMPS in October 2021. He holds a degree in Bioinformatics and he is a grad student in Medical Bioinformatics at the University of Verona. Besides being proficient in several types of programming languages, he also has a medical and biology background.

Simone has many passions, with basketball and scouting his main interests, both of which allows him to integrate very easily into the AMPS team.

The focus of Simone’s doctoral thesis is the improvement of the ECGScan algorithm.