

On Friday, April 8, 2022, the Cardiology Department of the Leiden University Medical Center and the Institute of Electrical and Electronics Engineers (IEEE) will organize a symposium, entitled:

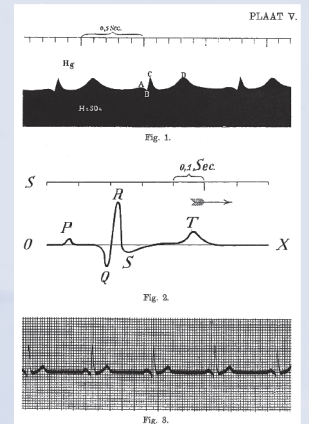
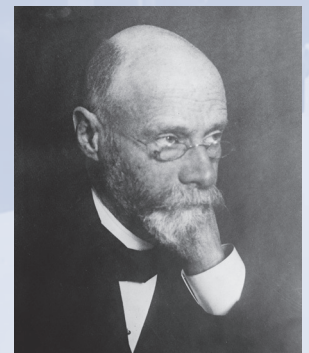
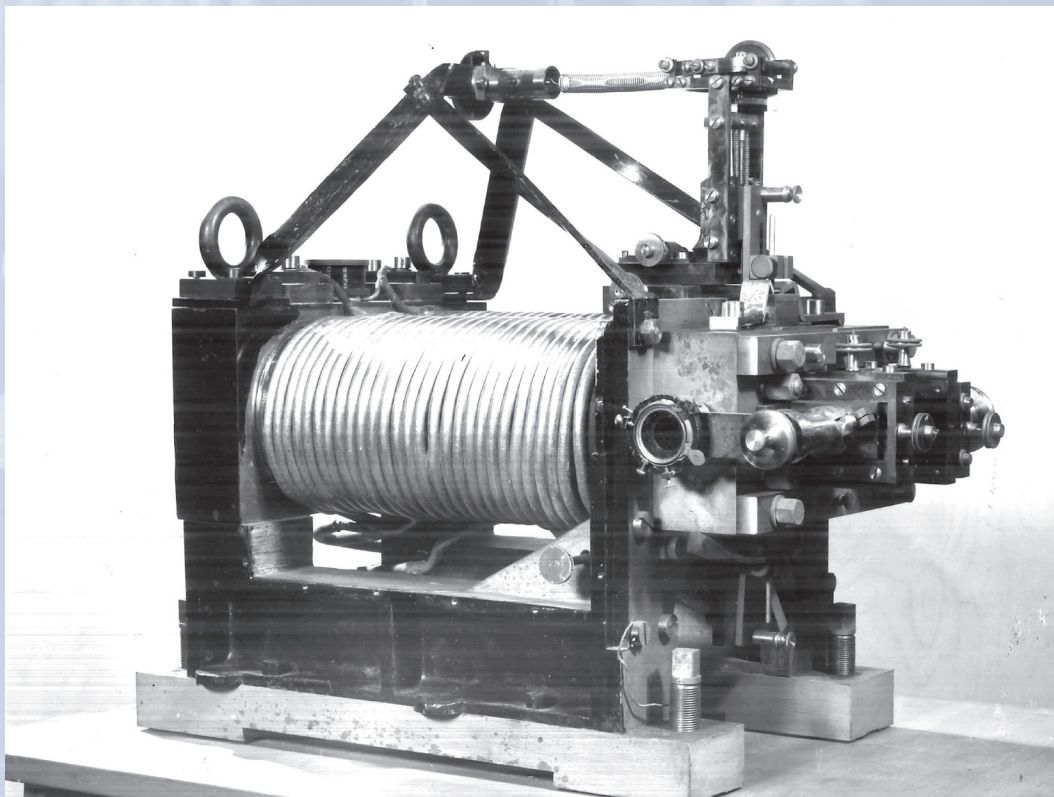
## IEEE Milestone Award “String Galvanometer” The Heritage and the Promise of Electrocardiography and Electrophysiology

During the symposium, the prestigious IEEE Milestone Award will be dedicated to the invention of the string galvanometer by Willem Einthoven.

Experts in the field will present the technical and medical background of the string galvanometer and the electrocardiograph. Contemporary and future possibilities of electrocardiography and electrophysiology will also be discussed. At the end of the symposium, the renown ‘Einthoven lecture’ will be given by professor Katja Zeppenfeld.

You can register for the symposium via: <https://tinyurl.com/stringgalvanometer>

Accreditation for post-academic education has been requested from the Netherlands Society of Cardiology (NVVC) and the Netherlands Society of Medical Physics (NVKF).



Willem Einthoven, his string galvanometer, and the figures (“Plaat V”) from his 1902 publication that show the improvement in ECG signal quality of the string galvanometer (Fig. 3) compared to the then existing method (Fig. 1).

# Program

## COVID-19

When COVID-19 restrictions would preclude local in-person meeting, the format of the symposium will be either hybrid or entirely digital, depending on the conditions.

**09:30 – 11:30: Boerhaave Museum tour**  
*(optional, separate registration needed)*

**12:00 – 18:30: Symposium**  
**Location: Leiden University Medical Center (LUMC), Collegezaal 1**

**12:00 – 13:15: Registration and light lunch**

**13:15 – 15:15: Part One: *The Heritage***

1. (13:15) *Prof.dr.ir. Wim van Etten* (Emeritus Professor of Telecommunication, University of Twente & Board member IEEE Benelux Section): The Institute of Electrical and Electronics Engineers (IEEE) and the IEEE Milestone Award
2. (13:35) *Prof.dr.ir. Paul P.L. Regtien* (Emeritus Professor of Measurement and Instrumentation, University of Twente): Physics and Engineering Aspects of the String Galvanometer
3. (14:00) *Prof.dr. Dirk van Delft* (Director, Boerhaave Museum Leiden & Special Professor of the History of Natural Sciences at Leiden University): Laboratory and Working Conditions of Einthoven During the Development of the String Galvanometer
4. (14:25) *Prof.dr. Norbert M. van Hemel* (Emeritus Professor of Clinical Heart Stimulation, Utrecht University): The ECG Collection of Willem Einthoven
5. (14:50) *Drs. Peter van der Geer* (local historian): "Einthoven lived here," a brief introduction followed by the video showing the unveiling of the monument remembering Einthoven, placed adjacent to his former house at Rijnsburgerweg 23, Leiden
6. (15:05) *Susan K. Land, MSc* (2022 Past President IEEE) & *Prof.dr. Pancras C.W. Hogendoorn* (Dean of the Medical Faculty of the Leiden University & Professor of Pathology, LUMC): Unveiling the IEEE Milestone Plaque

**15:15 – 15:45: Break**

**15:45 – 16:30: Part Two: *The Promise***

7. (15:45) *Dr. Roderick W.C. Scherptong* (Cardiologist, LUMC): The Bright Future of Clinical Technology and Technical Medicine
8. (16:10) *Dr. Matthijs J.M. Cluitmans* (Post-doctoral researcher at CARIM School for Cardiovascular Diseases, Maastricht University Medical Center & Philips Research Eindhoven): The Bright Future of Noninvasive Electrophysiology: Three-dimensional Ventricular Electrical Activation Patterns Assessed by a Novel High-frequency Electrocardiographic Imaging Technique - Principles and Clinical Importance

**16:35 – 17:15: Part Three: *Einthoven Lecture***

9. (16:35) *Prof.dr. Katja Zeppenfeld* (Professor of Clinical Electrophysiology, LUMC): State-of-the-art of Diagnosis and Treatment of Ventricular Arrhythmias (Einthoven Lecture)
10. (17:10) *Prof.dr. J. Wouter Jukema* (Head, Department of Cardiology, LUMC): Presentation of the Einthoven Award

**17:30 – 18:30: Reception at LUMC, Boerhaaveplein**

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*Symposium committee:* prof.dr.ir. Wim van Etten, prof.dr. Pancras C.W. Hogendoorn, prof.dr. J. Wouter Jukema, dr.ir. Cees A. Swenne, dr.ir. Enno T. van der Velde, drs. Enrico R. de Koning, drs. Lieke H.W. Ruigrok, mrs. Shelly Spijker, with support from Boerhaave Continuing Medical Education (mrs. Caroline M. van Battum).

The IEEE Milestone Award application procedure was initiated and completed by prof.dr.ir. Wim van Etten, dr.ir. Cees A. Swenne, and dr.ir. Enno T. van der Velde.