

# Smart Mathematics for the Inverse Problem in Electrocardiography

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*Propositions accompanying the dissertation*

**SMART MATHEMATICS FOR THE INVERSE PROBLEM IN  
ELECTROCARDIOGRAPHY**

Tiantian Wang

Maastricht, 28 November 2024

1. Using a fixed value of the regularization parameter is often sufficient to provide an acceptable solution to the inverse problem in electrocardiography. (This thesis)
2. Doing ECGI without scanning is suitable for first screening of patients, and patient follow-up after treatment. (This thesis)
3. The standardized 2D atria representation provides cardiologists a tool to help visualize and compare across different individuals and geometries. (This thesis)
4. Reformulating ECGI as an image-to-image translation task allows one to leverage state of the art deep learning methods from computer vision. (This thesis)
5. The nice thing about standards is that there are so many of them to choose from. (Andrew S. Tanenbaum)
6. A well-trained deep learning model can facilitate ongoing monitoring and testing, enabling personalized treatment plans. (Impact)
7. In real-world medical applications, clinical human data is the strict yet loving math tutor.
8. AI  ❤️: Smart Mathematics' Love Letter to Cardiologists.
9. 知之为知之，不知为不知，是知也。(孔子)  
Knowing is knowing, not knowing is not knowing, this is wisdom.  
(Confucius)
10. The unexpected blooming of flowers after a harsh winter symbolizes that academic challenges are simply expressions of human vitality and reflections of day-to-day existence.