Axel Loewe’s Publications

1 Peer-reviewed Journal Articles

Forthcoming


2023


2022

[j65] Sánchez, J. and **Loewe, A.** “A Review of Healthy and Fibrotic Myocardium Microstructure Mod-

1Equal contributions by several authors are denoted by *. 


2021


[2018]


[2017]


2 Data & Software


3 Proceedings

2022

[p87] Nagel, C., Schaufelberger, M., Dössel, O., and Loewe, A. “A bi-atrial statistical shape model as a basis to classify left atrial enlargement from simulated and clinical 12-lead ECGs”. In: vol. 13131. 12th Workshop on Statistical Atlases and Computational Modelling of the Heart (STACOM), Lecture Notes in Computer Science 2022. Pp. 38–47. DOI: 10.1007/978-3-030-93722-5_5.


2021


Wieners, C., Dössel, O., Loewe, A., Frohnapfel, B., and Heuveline, V. Book of Abstracts - Workshop on Cardiac Modeling - Towards an integrated numerical heart model, Coupling the relevant physics the right way. 2019. April 15-17, Bad Herrenalb, Germany.


2018


Alessandrini, M., Valinoti, M., Loewe, A., Oesterlein, T., Dössel, O., Corsi, C., and Severi, S. “A


2016


2015


2014


2013


2011


4 Abstracts

2023


2022


[a70] Dössel, O. and Loewe, A. “Bridging the Gap Between Cardiac Modeling and Clinical Applications”. In: Modelling the Cardiac Function - Theory, Numerical Methods, Clinical Applications. 2020.


[a63] Nothstein, M., Müller-Edenborn, B., Arentz, T., Doessel, O., Jadidi, A., and Loewe, A. “Mechanistic insights into arrhythmogenesis in atrial fibrillation - Exploring the underlying electrical activity
in AF and effects of targeted focal ablation of the critical substrate in-silico”. In: Biomedizinische Technik / Biomedical Engineering. BMT 2020 - 54th Annual Conference of the German Society for Biomedical Engineering (VDE|DGBMT) 2020. DOI: 10.1515/bmt-2020-6044.


2019


[a17] Loewe, A., Debatin, S., Lenis, G., and Dössel, O. “Optimal ECG lead systems to maximizme left atrial information content”. In: Biomedizinische Technik / Biomedical Engineering. Vol. 65.


5 Invited Talks


[t9] Loewe, A. “Predicting potential AFib patterns using computational modeling”. In: Atrial Signals Workshop 2021. Karlsruhe, Germany.


[t5] Loewe, A. “Validation upside down - In-silico models to sound the potential and limitations of diagnostic tools”. In: TRM Forum 2017. Lugano, Switzerland.

2016  [t4] Loewe, A. “Multiscale computational cardiology”. In: Computational Physiopathology Unit (Prof. Stefano Severi), University of Bologna 2016. Bologna, Italy.


[t1] Loewe, A. “Multiscale in silico modeling of human atrial electrophysiology”. In: Computational Cardiology Lab (Prof. Natalia Trayanova), Johns Hopkins University 2014. Baltimore, USA.

6 Patents


7 Public Outreach / Popular Science

2022


[b10] KIT im Rathaus. “Mein digitaler Zwilling: Welche Möglichkeiten eröffnen mathematische Computermodule des Herzens für die Diagnose und Therapie von Herzkrankheiten?” YouTube 2022. URL: https://www.youtube.com/watch?v=iLLXtmFFM&;list=PL0TmH52ybqIfnLU0b1Tkz8qFCuEJyRNJk&index=3.

[b9] Renal Research Institute, Frontiers in Kidney Medicine and Biology. “What ECG can tell us about the events on a molecular scale”. YouTube 2022. URL: https://www.youtube.com/watch?v=g75nZ0wISMI.


[b4] Fakultät für Elektrotechnik und Informationstechnik. “Studieren am KIT: Elektrotechnik und Informationstechnik (ETIT)”. YouTube 2021. URL: https://www.youtube.com/watch?v=m7q0o1KqVcE.


2018


See CV for further dissemination and outreach activities.

8 Book Chapters and Monographs

2022


2010  [b1]  Loewe, A. “Comparison of cardiac simulation tools regarding the modeling of acute ischemia”. Bachelor Thesis. Karlsruhe Institute of Technology (KIT).

9  Reviewer Activity

9.1  Funding Agencies

- Belgian Physical Society
- British Heart Foundation
- Czech Academy of Sciences, member of evaluation panel “Engineering and Technology”
- Deutsche Forschungsgemeinschaft
- Dutch Heart Foundation
- Dutch Research Council (NWO)
- Fondazione Leonardo
- Medical Research Council, United Kingdom
- Swiss National Science Foundation
- Wellcome Trust

9.2  Scientific Journals

- Annals of Biomedical Engineering (2019-20)
- Biomechanics and Modeling in Mechanobiology (2020)
- Biophysical Journal (2019, 2022)
- BMC Nephrology (2021)
- Cardiology Research and Practice (2021)
- Cardiovascular Engineering and Technology (2021)
- Cardiovascular Research (2018, 2022)
- Circulation: Arrhythmia and Electrophysiology (2021)
- Clinical Medicine Insights Cardiology (2019)
- Computers in Biology and Medicine (2018-21)
- Computing in Cardiology Conference (2017-22)
- eLIFE (2021)
- Engineering with Computers (2022)
- Europace (2016-21)
- European Heart Journal (2022)
- Expert Systems with Applications (2022)
- Frontiers in Cardiovascular Medicine (2020, 2022)
• Heart Rhythm (2017-19, 22)
• IEEE Transactions on Automation Science and Engineering (2022)
• IEEE Transactions on Biomedical Engineering (2016, 2019-21)
• IEEE Transactions on Medical Imaging (2022)
• International Journal of Clinical Cardiology (2017)
• International Journal for Numerical Methods in Biomedical Engineering (2022)
• JACC Clinical Electrophysiology (2021-22)
• Journal of Cardiovascular Electrophysiology (2021-22)
• Journal of Computational Physics (2021)
• Journal of Open Source Software (2021-22)
• Mathematics (2022)
• Medical and Biological Engineering and Computing (2016-17, 2019)
• Medical Image Analysis (2020-21)
• Platform for Advanced Scientific Computing (PASC) Conference (2021)
• Philosophical Transactions of the Royal Society A (2019-20)
• Physiological Reports (2022)
• PLOS Computational Biology (2017, 2019)
• PLOS ONE (2019)
• Simulation: Transactions of the Society for Modeling and Simulation (2018)
• Wellcome Open Research (2022)

9.3 Universities

• Ghent University (2021)
• KIT Department of Mathematics (2022)
• KIT Department of Electrical Engineering and Information Technology (2020-2022)
• Politecnico di Milano (2021)
• Università degli Studi di Milano (2022)
Axel Loewe’s Supervisions

10 Supervised PhD Students


  • Brenneisen, J., expected 2023
  • Barrios Espinosa, C.A., expected 2024
  • Martínez Díaz, L.P., expected 2024
  • Martínez Antón, C., expected 2024
  • Krauß, J., expected 2025
  • Steyer, J.F., expected 2025

11 Supervised and Refereed Student Theses


11 Supervised and Refereed Student Theses


