Topological Invariants in Fixed Point Theory and Dynamical Systems
Gdańsk University of Technology, January 29–31, 2024

Entropy-based methods in the analysis of long-term ECG recordings

Katarzyna Tessmer[1] and Grzegorz Graff[2]

[1] *Faculty of Applied Physics and Mathematics, Gdańsk University of Technology*
[2] *Faculty of Applied Physics and Mathematics, Gdańsk University of Technology*

The aim of the study was to examine the discriminating capability of various types of entropy measures applied for long-term ECG series. In this research we used six entropy-based methods: Permutation Entropy, Block Entropy, Generalized Permutation Entropy, Incremental Permutation Entropy, Incremental Block Entropy and Incremental Generalized Permutation Entropy. Data from two groups of subjects were considered: healthy individuals with normal sinus rhythm and patients with congestive heart failure. We analyzed long-term ECG recordings (of length 75 thous. RR intervals) taken from PhysioNet database. The results confirmed that the entropy-based methods are able to separate the two groups, and thus are promising tools in cardiovascular research as indicators of pathological states.