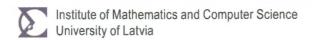# 23rd International Conference on

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ABSTRACTS

Institute of Mathematics and Computer Science
University of Latvia

Latvian Mathematical Society

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TECHNICAL UNIVERSITY

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The cover photo by Inese Bula.

DISCOVERY ASSUMPTION FOR TIME REGISTRATION IN THE HEART RATE VARIABILITY

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The paper is destined for use in medicine, psychology, in man's self-development training; breathing techniques training, in the field of stress resistance, health promotion, strengthening of the capacity for work. We involve new technology for registration of time interval between two consecutive EKG RR intervals (R peaks) or pulse wave peaks, which consist of simultaneous registration of two time intervals: 1) the time between two consecutive R peaks, and 2) time interval from the beginning of registration and beginning of each wholesome R or pulsogram peak. Our new mathematical algorithm allows reconstructing all pulsogram or RR intervalogram, providing full use of time domain and also frequency domain methods.

Whereas the frequency time domain is the essence of each curve against the curve point of beginning, then we decided that it is better to go by road, which consists of 2 steps independently. First is registration. We traditionally registered one size of place (the time interval between the current and the previous heart beats) in addition to each pulse blow we register also time interval from the beginning to of the strike. And the second – we filled the pulse interval pulsogram registration empty space with the original mathematical algorithm assistance. The idea of time registration in living systems are not known to us.

We have empty segment, which begin with u_0 and finished with u_{N+1}. The unknown values (pulse beats) are u_j, $i = \overline{1, N}$, $N > 1$. In numerical mathematics the traditional way is to approximate this empty interval with spline function. Unfortunately, this problem differs from classical interpolation problem in two points. In numerical mathematics are given the points in which are given the unknown function values. Here we don't have points and don't have the values (heartbeats length).

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