

## ANALYSIS OF LONG-TERM RHYTHMOGRAM

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Questions concerning the analysis of long-term rhythmogram are considered. Well known standard methods perform data analysis bur after full registration. Each of them has advantages, but returns result at the end if investigation.

We propose to perform data analysis during each five minutes registration. To realize this idea next structure module for data analysis was developed (fig. 1).

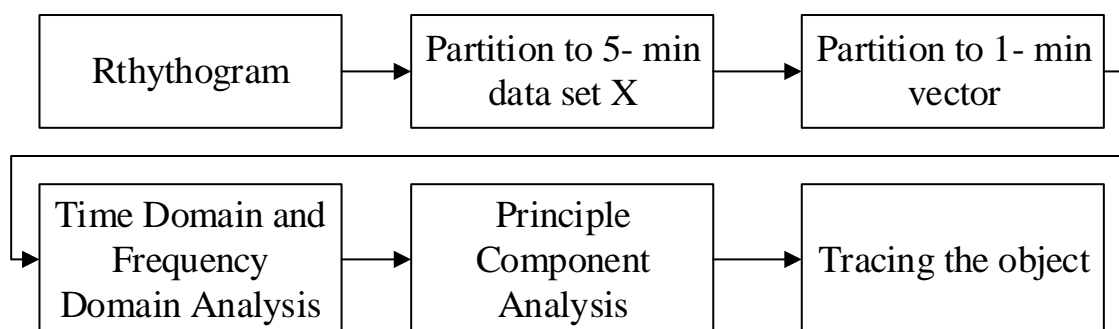


Figure 1 – Scheme of data analysis after each 5-minutes registration

Rhythmogram is recorded in real time. After every five minutes new temporary data set is creates as matrix  $X (n \times m)$ , having  $n$  rows and  $m$  colons. Each row contains from the Time Domain parameters and Spectral components, calculated for one minute vector within current five minutes interval. We had developed software in MatLab, investigated 50 48-hours data sets then chose the most informative seventeen parameters, found by Time Domain and Spectral Analysis.

Principal Component Analysis was selected as method to reduce dimension of data set, represent the object (rhythmogram of one minute duration) in two dimension space then give the integral assessment of functional state. The most reasonable here is definition of direction of development of system, i.e. prediction of function state. Proposed method may be applied in real-time mode to do fast assessment of rhythmogram.

### Reference:

1. Malik M. Heart rate variability Standards of measurement, physiological interpretation, and clinical use / Marek Malik. // European Heart Journal. – 1996. – №17. – C. 354–381.