

## The Estimation of Human Vital Signs Complexity

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**Abstract :** Non-stationary and nonlinear signals generated by living complex systems defy traditional mechanistic approaches, which are based on homeostasis. Previous our studies have shown that the evaluation of the interactions of physiological signals by using special analysis methods is suitable for observation of physiological processes. It is demonstrated the possibility of using deep physiological model, based interpretation of the changes of the human body's functional states combined with an application of the analytical method based on matrix theory for the physiological signals analysis, which was applied on high risk cardiac patients. It is shown that evaluation of cardiac signals interactions show peculiar for each individual functional changes at the onset of hemodynamic restoration procedure. Therefore we suggest that the alterations of functional state of the body, after patients overcome surgery can be complemented by the data received from the suggested approach of the evaluation of functional variables interactions.

**Keywords :** cardiac diseases, complex systems theory, ECG analysis, matrix analysis

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