Evaluation and prediction of resource and functional parameters of biophysical objects

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An important element of the quality of any physically challenging system, such as technical or biological object, is their life, which is defined as the effective time of the functional capability of the system. Today, the most urgent task is objective assessment of the residual life prediction of the physically challenging system, i.e. period of time from some present time monitoring system till the end of its results in the effective functioning in future, in particular: the failure, malfunction, or the hyper-whites. To solve the problem of estimation and forecasting of the residual life of living organisms, including a human being, we offer in the paper a mathematical model, mainly reflecting the impact of different physical knowledge and information available diagnostic factors which impact on the body and, as a consequence, its resource indicators.

Keywords: prediction, resource-functional parameters, biophysics.

REFERENCES

- Schroeder Y., Huyghe J., Donkelaar C., Ito K. A biochemical/biophysical 3D FE intervertebral disc model. *Biomechanics and Modeling in Mechanobiology*, 2010, vol. 9, no. 5, pp. 641–650.
- [2] Fernandes R., Leblanc S. Parametric (modified least squares) and nonparametric linear regressions for predicting biophysical parameters in the presence of measurement errors. *Remote Sensing of Environment*, 2005, vol. 95, no. 3, pp. 303–316.
- [3] Bicheron P., Leroy M. A Method of Biophysical Parameter Retrieval at Global Scale by Inversion of a Vegetation Reflectance Model. *Remote Sensing of Environment*, 1999, vol. 67, no. 3, pp. 251–266.
- [4] Barzov A.A., Proletarsky A.V., Sysoev N.N., et al. Fundamental'nye vozmozhnosti informatsionno-diagnosticheskoy sistemy "Electronnyi doctor" v reshenii zadach fisicheskoy ekologii cheloveka [Fundamental possibilities of the informational diagnostic system "Electronic doctor" when solving tasks of human physical ecology]. Preprint, 2013, no. 1. Moscow, Lomonosov Moscow State University, 2013, 29 p.

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