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ON A METHODOLOGICAL APPROACH TO THE PROBLEM OF QUANTITATIVE RISK ASSESSMENT FOR SPACE HARDWARE DEVELOPMENT PROJECTS (PART I)

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The aim of this work is to construct a theoretical basis for the development of methods, algorithms, and software for quantitative assessment of new space hardware development project risks that are due to uncertainty factors. The presented methodological approach to quantitative risk assessment is a synthesis of mathematical uncertainty modeling and simulation modeling, the former being constructed on the basis of the fuzzy set theory, the possibility theory, and time series forecasting methods.

This part of the paper (Part I) presents a general theory for quantitative assessment of space hardware development project risks and theoretical basics for retrospective source data uncertainty modeling by counterpart products.

A practical implementation of the presented results will make it possible to significantly improve the quality of the feasibility study of new home space hardware development projects.

Keywords: quantitative risk assessment, mathematical uncertainty modeling, simulation modeling method, methods and algorithms, space hardware, uncertainty factors.

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