

Название публикации:

Algebraic approach to the risk description. Linear programming models with risk

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Аннотация:

One of the most important questions in the Systems Theory is the question of risks description. This chapter begins with an analysis of known existing approaches to risks description. In this connection, the main attention is paid to the quantitative definition of risk, which follows from the Kolmogorov-Chapman equation. Also, an approach to the classification of system risks from the position of algebraic formalization of the system is considered. The risk function r of the system is defined as a function dual to the probability measure in the framework of algebraic systems formalization. Probabilistic spaces with risk are examined. Some relationships between the Kolmogorov risk function $h(x)$ and the risk function $r(x)$ are found. The risks of changes in formalizations (“failure of formalization”) of the system using the Kolmogorov-Chapman equation for exponential distribution are calculated. Also we present a model of linear programming with risk. In some cases a measure of systemic risk is proposed. Item content: a system S is a risk one or a P-risk one if it works in some cases autonomous, in the others not. Examples: P-innovative and P-effective systems are risk-free.

Ключевые слова:

Linear programming with risk, Measure, Risk function, Algebra, Linear programming, Risks, Algebraic approaches, Classification of systems, Exponential distributions, Linear programming models, Measure, Probability measures, Quantitative definition, Risk function, Risk assessment