

Название публикации:

External and Internal Properties of a System. Integrity and P-Integrity of a System by Predicate P. Formalization Smart Systems' Axiomatic

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ALGEBRAIC FORMALIZATION OF SMART SYSTEMS: THEORY AND PRACTICE

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Аннотация:

We begin this chapter from the consideration the basic properties that determine the system: integrity, internal and external attributive features that determine the system, that is, distinguishing precisely this system from all others, in the language of algebraic formalization. Then the integrity property is generalized to the case of P-integrity and P-internal and P-external attributive characteristics of the system, allowing to classify the properties of the system according to their various components. The notions of a quasi-stable system with respect to the property P and the innovation system with respect to the property P are introduced. While constructing the algebraic formalization of smart systems, we shall take into account the Godel incompleteness theorem, the essence of which is that it is impossible to describe the system by using the means of this system only. As well a hierarchy of different levels links of the system is constructed. A theorem on the description of the system's links is proved. In addition, on the base of the theory of binary relations constructed by A. I. Mal'tsev, a classification of the binary relations of a system of each finite level is upbuild. The obtained results are applied to construct smart system's axiomatic and to models describing the system's synergistic effects and the processes of system's decomposition and synthesis.

Ключевые слова:

P-integrity; Quasi-stable system; Synergetic