

Projective systems and embedding technology

Professor Valentin N. Bukov

Federal State Unitary Enterprise, Tupolev str., 18, Zhukovskii, Moscow region, 140182,
Russia

v_n_bukov@liant.ru

An approach to modeling, analysis and design mainly of the linear dynamic systems is presented. It focuses on an advanced analytical solution of the arising mathematical problems. Study of the solvability conditions and construction of the formula representations of the entire set of possible equivalent solutions relies on a specially developed apparatus which includes formation and use of the so-called promatrices (problem matrices) and a method of canonization of the arbitrary matrices which separates the linearly dependent and linearly independent rows and columns of these matrices.

Then this apparatus is applied to one type of non-linear systems, which called the projective systems. The embedding identity and the projective system promatrices are considered. On basis of these constructions the equations of prototype-based system design are built.

The paper contains an example of application of the given solution for design problems. We consider such logistic problem as isolating of the investment performance for two players in a common market. Corresponding equations of the control object produce the so-called "two-dimensional logistic curve".

References

[1] Bukov V.N. System Embedding. Analysis and Design of Matrix Systems: An Analytical Approach, Kaluga: N. Bochkareva's publishing house, 2006 (in Russian).