

SYSTEM DESIGNING OF FUNCTION-ORIENTED PROCESSORS FOR ONBOARD CORRELATION EXTREME NAVIGATION SYSTEMS

©2009 N. A. Lukin

Institute of Machine Science, Ural department of the Russian Academy of Sciences, Science-and-Production Association of Automation, Yekaterinburg

The paper presents the results of investigating optimal realization of the conjunction algorithm, one of the main ones in the complex of algorithms of correlation extreme navigation systems using sensors of geophysical fields. The main result of the investigation is the procedure of algorithm DH-synthesis which makes it possible to synthesize rational architectures of function-oriented processors (FOP). Possible implementation of the conjunction algorithm on the basis of a two-dimensional array of processor elements in VLSI technology is described. The results of DH-synthesis as applied to FOP based on standard microprocessors are presented. The results of developing two generations of actual onboard FOPs for CENSs produced with the use of the procedure proposed are given.

Correlation extreme navigation systems, function-oriented processor, complexity of computations, parallel data processing.

Lukin Nikolay Alexeyevitch, head of laboratory, candidate of technical science, senior researcher, Institute of Machine Science, Ural department of the Russian Academy of Sciences, e-mail: nicklookin@mail.ru. Area of research: function-oriented processors, parallel computations, very large-scale integrated circuits, computer arithmetic, complexity of computations.