

the ground and air vehicles of the EW and provides for conducting radio-electronic attacks, as well as radio-electronic defense of the units of the operational-tactical level to the brigade inclusive. The DEA electronic defense system provides protection for mobile forces and equipment as well as stationary objects from radio-controlled self-made explosive devices.

3. BASIC PRINCIPLES AND METHODS FOR THE TECHNICAL IMPLEMENTATION OF ARITHMETIC OPERATIONS IN THE RESIDUAL CLASSES SYSTEM

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The basis of the report is the principles of data processing in the residual classes system. It is also possible to increase the productivity of the CSC and the reliability of processing integer data based on the use of new machine arithmetic. In the positional numeral system, the execution of an arithmetic operation involves the sequential processing of the digits of operands according to the rules determined by the content of the operation, and cannot be completed until the values of all intermediate results are sequentially determined taking into account all the connections between the digits. Therefore, it is natural to look for possibilities of using such arithmetic, in which there would be no queuing connections. In this regard, the system of calculus in the residual classes draws attention to itself. The system of residual classes has a valuable property of the independence of the residuals from each other on the basis of the adopted system. This independence offers wide opportunities for constructing not only new machine arithmetic, but also a fundamentally new scheme for the implementation of computer systems, which in turn significantly expands the use of machine arithmetic.

4. METHODS AND TOOLS FOR FAST AND RELIABLE PROCESSING OF INTEGER DATA PRESENTED IN THE RESIDUAL CLASSES SYSTEM

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The research thesis aims at strengthening the information security on the basis of ensuring the reliability, confidentiality, integrity and availability of state information resources, information with limited access, including the one that circulates on the objects of critical information infrastructure in the conditions of information wars. The content of the report is: analysis of the state of information security in modern computer systems (CS) and networks, including those with critical functions; substantiation of requirements and directions of development of the CS and networks in order to increase the information security in the CS and networks on the basis of the development of models and methods of information exchange; increasing the speed and integrity of processing integer data in the CS and dual-use networks, including applications for cryptographic data transformations, the formation and processing of new types of code-signal structures - data carriers with necessary properties and their processing methods.

5. ESTIMATING THE COST OF THE TOROIDAL-LATTICE COMMUNICATION NETWORK

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Growing the size of the toroidal-lattice network (TLN), leads to an increase the number of its possible configurations (variants of structural construction). Optimal, to achieve the best values of the main topological metrics, is a hypercube configuration, which, however, has the highest topological cost. For TLN of size $N=2n \geq 32$, there are "underoptimal" configurations, which, in comparison with the hypercubic, have a smaller order of nodes and topological cost with a slight increase in the maximum diameter and a decrease the bisection width in twice. The number of such TLN configurations increases with growing of size. Estimating the cost of TLN exceptionally at the topological level seems too simplistic to justify the choice of a specific network configuration because it does not take into account the degree of complexity of its nodes. The complexity of TLN nodes can be estimate as aggregate hardware costs (in the number of valves) for the hardware implementation of an optimal coordinate adaptive routing algorithm based on a