МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
СУМСЬКИЙ ДЕРЖАВНИЙ УНІВЕРСИТЕТ
КАФЕДРА ІНОЗЕМНИХ МОВ
ЛІНГВІСТИЧНИЙ НАВЧАЛЬНО-МЕТОДИЧНИЙ ЦЕНТР

МАТЕРІАЛИ

XIV ВСЕУКРАЇНСЬКОЇ НАУКОВО-ПРАКТИЧНОЇ КОНФЕРЕНЦІЇ СТУДЕНТІВ, АСПІРАНТІВ ТА ВИКЛАДАЧІВ ЛІНГВІСТИЧНОГО НАВЧАЛЬНО-МЕТОДИЧНОГО ЦЕНТРУ КАФЕДРИ ІНОЗЕМНИХ МОВ

«TO MAKE THE WORLD SMARTER AND SAFER»

26 березня 2020 року

Сумський державний університет
(вул. Римського-Корсакова, 2, м. Суми, Сумська обл., 40007)

Суми
2020

the pump, when pumping liquids 20^0C using cone hydraulic losses would decrease by 3% in comparison with the standard pocket. If pumping hot liquid you need to use a trapeze, despite her loss, which in sum will give a reduction of hydraulic losses by 1%. compared to the pocket.

PLANE CODING DEVICE

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While designing a fault protection device, one of the most important tasks is to ensure the high reliability of the transmitted data with the highest possible speed at the lowest possible cost. In order to accomplish this task, it is necessary to use codes capable of detecting and correcting an error. To achieve noise immunity, a combinatorial plane code is often used.

Analysis revealed a number of advantages when using a plane code, one of which is the possibility of detecting and correcting an error at any point of the plane of the combinatorial coordinates system. In the predicted code, the number of control characters *k* is equal to the number of coordinates, and the total number of information symbols *m* is the number of combinations *k* to 2:

$$m = C_k^2 = \frac{1}{2} \cdot k(k-1) \qquad (1)$$

where *m* is the number of information symbols, *k* is the number of control characters.

There are two modes of operation in the designed device, and depending on the number of obstacles encountered in the channel, one of them is used: *k* = 7 (mode I) and *k* = 4 (mode II). Using (1) we calculate that the maximum number of information symbols *m* = 21 (mode I) and *m* = 6 (mode II), respectively.

For heavily noisy channel mode I is used. It is characterized by a higher level of noise immunity than in mode II. If the channel is relatively noiseless, the mode II is used, which is characterized by a higher data rate.

The plane encoder corrects only one-time errors. As for errors of different multiplicity, it can only detect them. Malfunction signals are analyzed for their frequency of receipt and subsequent selection of the transmission mode.

The analysis showed that the use of plane code is optimal for transmitting information with the high speed and the high level of protection against errors.

A USAGE OF GRID-TECHNOLOGY FOR MODELING PHYSICAL PHENOMENA IN MODERN SCIENCE

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It is well known that modern scientific problems are very complicated and can not be solved by pen and paper without computers. The main reason for usage computer resources is a lot of equations need to be solved and huge amount of data need to be used for corresponding computations.

Nowadays scientists use HPC clusters (high-performance computing cluster) for solving their complicated scientific problems instead of low productive PC (personal computer). HPC clusters consist of several computation nodes connected in one cluster through fast local area networks. Each node is a specialized HPC computer with extended memory and consists of several high performance processors operating in parallel manner. A computer cluster may be a simple two-node system which just connects two personal computers. It may be a very fast supercomputer. A basic approach to building a cluster is that of a Beowulf cluster which may be built with a few personal computers to produce a cost-effective alternative to traditional high performance computing.

Computer clusters may be built for different purposes. A general purpose for business needs web-service support, a purpose for simulations of physical phenomena is in computation-intensive scientific calculations. In case of extremely complicated problems