News of the anniversary year 2018

Dear friends! This 2018 is an anniversary year for theory and techniques of noise-resistant coding in many respects at once. First, it is the 70th anniversary of the great Shannon's article "Mathematical theory of communication", which has opened up limitless possibilities for the development of the digital world, which was quite obvious before the advent of this new format for the development of the information society. But the other Anniversary has purely Russian roots. This is the 25th anniversary of the first doctoral (Dr. Sci.) thesis on the theory and algorithms of multithreshold decoding (MTD), which has now become a comprehensive scaled Optimization Theory (OT) of noise-resistant coding, fully describing simple effective decoding methods for all channels with independent distortions known in coding theory (see for example: http://www.mtdbest.ru/articles/Zolotarev_DSPA_2017.pdf) (in Russian now for the time present).

It's the advantage compared to other, in truth, not very deep and poorly reasoned theories, is that on the basis of the simplest methods of majority (threshold) type for many classes of codes created by the algorithms of their decoding, which with a linear increase in their complexity relatively the length of the codes used to converge to the optimal solutions that were previously available only for special classes of problems, i.e. exponentially complex code length methods.

At the same time, it is very important to emphasize that since about 1975, for many classes of codes with different values of code rates and minimum distances, multithreshold decoders have been successfully developed, which were significantly simpler than many other methods of error correction. But they were the simplest ways to achieve optimal solutions. And over the years, the possibilities have increased many times and now fully implemented hardware or software algorithms developed in the framework of this theory for all types of channels provide simple high-accuracy decoding at the noise level, only slightly different from the equality of channel capacity and code rate.

This always turns out to be the case in this parameter area characteristics of MTD algorithms and other methods OT the brand unattainable for any other methods with reasonable complexity implementations. This means that the methods of OT theory, which is now part of the theory of global functionals optimization in special digital spaces, successfully and completely solved the problem stated 70 years ago by C. Shannon. With this, of course, a great achievement of our scientific school can be congratulated and set new goals in achieving even higher performance of the decoding algorithms. All the latest achievements from created the conditions for the reasoned statement about the complete solution of the most fundamental problem of reliability, complexity and noise immunity for digital information civilization by our scientific school.

All the main results on theory, algorithms, patents and technologies that yielded such good results that don't even come close, no other research teams and

schools, contained in the new monograph of the one of the our school OT leaders V. V. Zolotarev "Coding Theory as a Task of Search of Global Extremum (Optimization Theory of Error Correcting Coding is the New "Quantum Mechanics" of Information Theory)" under the scientific editorship of academician of the Russian Academy of Sciences N.A. Kuznetsov.

Specialists in the realm coding theory can get acquainted with the introductory article to the monograph of the scientific editor, the author's appeal to readers and the conclusion to this book on our website **www.mtdbest.ru** on its main page "About the method". Now they are in Russian. some time later we prepare their translations. You can buy a new monograph in the publishing house, in the Internet and its author (e-mail: **zolotasd@yandex.ru**) .

We are ready to consider all suggestions on possible publications of our monographs abroad.