Dr. Sc. V.V.Zolotarev (**SRI RAS**) starts reading <u>a course of the lectures</u>
"Modern Methods of Noiseproof Coding
with the Characteristics of Optimum Algorithms"
The original decoding iterative methods are presented in ~100 times more fast
than turbo decoders and other algorithms.
The numerous special visualizing computer means are used.
The program of the course
The lecture 1.
The review of modern methods of noiseproof coding
1. The place of noiseproof coding in a communication engineering.
2. Effectiveness criterion of coding .
3. The characteristics of the main decoding algorithms.
4. Kinds of channels and demodulation methods.
5. Global optimization - revolution in decoding.
6. Complexity of decoding as a number of operations.

The lecture 2.
Technology of decoding as a problem of global optimization
1. An application of optimization procedures for decoding
2. Syndrome of a linear code as a measure of distance at decoding.
3. Definition of multithreshold decoding (MTD) and its properties.
4. Problem of accessibility of the optimum decision.
5. New approach to an error propagation effect of the majority decoder.
6. Yardstick of selection of codes for MTD.
7. Analysis of the main properties of MTD with the help of computer movies.

Lecture 3.
Methods of concatenating and non-binary codes for MTD.
1. Principles of sequential and parallel concatenation.
2. Characteristic of the best concatenating methods .
3. Complexity of concatenating decoding circuits.
4. Major properties of algorithms - multisequencing.
5. MTD for binary codes - are better and easier than decoders RS.
6. Bounds of the characteristics MTD for q-ary codes.

Lecture 4.
Methods of MTD developing.
1. Optional requirements for development of coding systems.
2. Characteristics of MTD with hard and soft modems.
3. Selection (n, k, d)-code by the requirements to efficiency.
4. Upper and lower estimations of the MTD characteristics.
5. The possibility of using the concatenation for MTD.
6. Complexity of different decoders at a large channel noise levels.
7. Simulator of satellite channels with the best decoding algorithms.
8. Conclusions on a cycle of the lectures.

We suggest to learn your specialists <u>in Moscow</u> or to organize a cycle of the lectures directly <u>in your firmes or Universities.</u>

The references in Moscow, NIIRadio: tel.: +7 095 261 54 44, IKI RAS: +7 095 333 23 56, or mob. tel.: +7 916 518 86 28, e-m: <u>zolotasd@yandex.ru</u>.

The additional information - on a web-site **SRI RAS** <u>www.mtdbest.iki.rssi.ru</u>.