The Multithreshold Decoders
- are Scientific and Technological Revolution
in Providing the High Veracity of Digital Communications

In NIIRadio and in Space Research Institute RAS (Moscow, Russia) the development of effective **multithreshold decoding (MTD) algorithms** is finished successfully for noiseproof coding. The code gain (CG) in energy is 7 dB and even more. For the first time this CG is reached at minimally possible complexity of decoder implementation and with practically unlimited throughput. We are in advance of foreign researches, by our estimations of decoding technology, at 5-7 years.

In modern communications networks each additional 1 dB in CG is estimated in foreign researches in millions dollars, due to the considerable growth of transmission rates, decrease of the aerials sizes, distance increase and reliability of communications. MTD guarantees an **additional CG 3-5 dB** with respect to the **Viterbi algorithm** (VA).

The VA has made technological revolution in 70-th years of the XX-th century. **MTD - is the basis of the second Scientific and Technological revolution**. It allows to work at the greatest possible noise levels of a channel at arbitrary high speeds of decoding. In quick channels it has no any alternative. In more slow communication channels MTD requires **in ~ 100 times** less number of operations, than equivalent on efficiency other algorithms!

We suggest MTD in PLIS Xilinx for speeds 160-480 Mbit/s and CG ~7-8,5 dB.
You may get software MTD for binary flows and speed 10 Mbit/s and more.

The characteristics of MTD are completely unapproachable for other methods. The comparative capabilities VA and two MTD versions (usual and concatenated, MTD-C) are submitted below on a graph of decoding veracity against bit energy to noise ratio in satellite channels for code rate R=1/2:

The effectiveness of old and new decoding algorithms

The additional information on capabilities of MTD algorithms is accessible on our specialized SRI RAS web-site **www.mtdbest.iki.rssi.ru** and in our review on modern coding methods published in the head Russian magazine "Elektrosvaz" of Ministry of Communications, 2003, No. 9, pp. 34-37.

For a contact: NIIRadio, Moscow, Russia: т. +7 095 261 03 27, +7 095 261 54 44;
e-mail**: zolotasd@yandex.ru,**mob. in Russia**: +7 916 518 86 28, S.E.Gukov,V.V.Zolotarev**