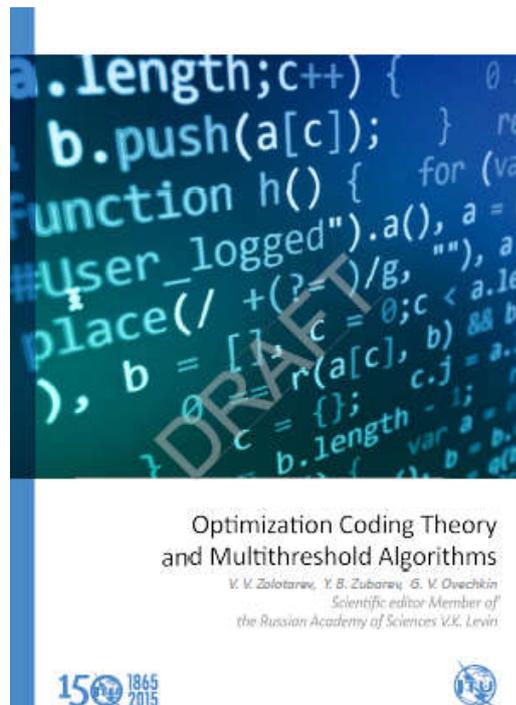


Optimization Coding Theory and Multithreshold Algorithms

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This new work by Professors Valeriy Zolotarev, Gennadiy Ovechkin and Yuriy Zubarev sets out the basic principles of modern error-correcting optimization coding theory, before moving on to consider multithreshold decoding (MTD) algorithms. With each symbol correction iteration, these iterative algorithms always find decisions of strictly increasing likelihood and can achieve optimum results that would normally require exhaustive search of all possible code words. It reviews the capabilities of symbolic codes discovered by the authors and the corresponding, simple-to-implement special symbolic MTD decoders, which are easier and more efficient than all other known methods of decoding non-binary codes. Concatenated parallel-type arrangements and other configurations that enhance the efficiency of MTD are proposed. The efficiency limits of real codes with a code rate close to channel capacity are valued. The effectiveness and complexity of error-correction procedures in software and hardware implementation are assessed. This work will be of interest to experts in the field of coding theory, communication system developers and undergraduate and postgraduate students in relevant disciplines.

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