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Error detection in data storage systems and distributed voting protocols

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The problems of silent data corruption detection in the data storage systems (Reed-Solomon codes) and faulty share detection in the distributed voting protocols (Shamir scheme) are treated from a uniform point of view. Namely, the both can be interpreted as the problem of systematic error detection in the data set $\{(x_1, y_1), \dots, (x_N, y_N)\}$ generated by a polynomial function $y=f(x)$ in some finite field. We suggest a method of solution of this problem based on construction of the error locator polynomial in the form of the appropriate Hankel polynomial generated by symmetric functions of the data set.

Summary

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