
Asymptotical properties of testing error probability estimates for information security systems

© V.A. Matveev, M.A. Basarab, I.I. Troitsky

Bauman Moscow State Technical University, Moscow, 105005, Russia

Asymptotical properties of testing error probability estimates for information security systems are studied under conditions of mutual independence of tests. The information security system's state is described by three parameters. The first parameter is a real workability, the second one is a result of the workability test, and the third parameter is the number of an information security tool being tested. Mean value and variance of the error probability estimate are determined on the base of the polynomial distribution of error estimates for each test. It is proven that the testing error probability estimate asymptotically has a normal distribution with definite parameters of mean value and variance. Knowing the law of the testing probability estimate distribution and its parameters, we can find a confidence interval for the needed testing error probability for information security systems.

Keywords: *testing error, estimate, probability, information security tool.*

Matveev V.A. (b. 1939), Dr. Sci. (Eng.), Professor, Head of the Informatics and Control Systems Research Educational Complex, Head of the Information Security Department at Bauman Moscow State Technical University. Honored scientist of the Russian Federation, Laureate of the State Prizes of the USSR and RF, Laureate of the Russian Government in science and education.

Basarab M.A. (b. 1970) graduated from the Kharkov Aviation Institute in 1993. Dr. Sci. (Phys.&Math.), Professor of the Information Security department of Bauman Moscow State Technical University. Author of more than 100 publications in the fields of applied mathematics, informatics, digital signal processing, and radiophysics.

Troitsky I.I. (b. 1955) graduated from the Moscow Engineering Physics Institute in 1978. Ph. D., Assoc. Professor at Information Security Department of Bauman Moscow State Technical University. Author of more than 40 publications in information security field and researching of information processing systems. e-mail: iitroickiy@mail.ru
