

Martynov Gennady. Goodness-of-fit tests for exponentiated
exponential distributions.(IITP RAS)

Recently, in the applications of statistical methods, the exponentiated exponential distributions $F(x; \theta, \kappa) = (1 - e^{-x/\theta})^\kappa$, $x \geq 0$, $\kappa > 0$, $\theta > 0$ has become widespread. Such a distribution is considered as an alternative to the exponential and Weibull distributions. Therefore, the work on testing the hypothesis about the correspondence of the observed data to the distribution family under consideration is relevant.

Theorem 1. *The covariance function of the corresponding parametric empirical process be $C(t, \tau, \kappa) = \min(t, \tau) - t\tau - N_1(t, \tau, \kappa)/D_1(\kappa) + N_2(t, \tau, \kappa)/D_2(\kappa)$ and it depends only on one parameter κ . The functions N_1 , N_2 , D_1 , D_2 are given in the presentation. The covariance function has the removable singularity at $\kappa = 1$ and $\kappa = 2$.*

Using a special method for application Smirnov's formula, five-digit tables of distribution of the corresponding variants of the Cramer-von Mizes-Smirnov statistic are calculated. Analogue three-digit tables are also obtained by modeling for Kolmogorov-Smirnov statistic.