**Shiryaeva L. K.** (Samara, Russia) — **On properties of Grubbs' statistics in case of normal sample with outlier.**

We consider one-sided Grubbs' statistics, i.e. studentized extreme deviations of observations from mean calculated for a normal sample of size $n$ (see [1]). Let there be one abnormal observation (outlier) in the sample, which number in the sample is unknown. We believe that an outlier differs from the other observations by the shift parameter $\alpha$ and the scale parameter $\nu > 0$. The recursive relationships for the marginal distribution functions and the joint distribution function of one-sided Grubbs' statistics were found in [2]. An algorithm for computing of the such distribution functions is received. The influence of parameters $n$, $\alpha$ and $\nu$ on characteristics of Grubbs' statistics is studied. To investigate the strength of interdependence between statistics, an algorithm for calculating estimates of the Spearman and Kendal rank correlation coefficients, as well as the Pearson linear correlation coefficient, has been developed. Statistical modeling showes that the force of interdependence between marginals decreases with the growth of the parameter $n$, but increases with the growth of $\nu$ and $|\alpha|$.

REFERENCES


1. *Grubbs F.* Sample criteria for testing outlying observations. Ann. Math. Statist.,1950, V.21, N 1, p. 27–58.
2. *Shiryaeva L.K.* On distribution of Grubbs' statistics in case of normal sample with outlier. Russian Mathematics, 2017, V.61, N 4, p. 72–88, DOI 10.3103/S1066369X17040107.