

APPROXIMATING THE TAIL PROBABILITIES OF THE TRIMMED LONGEST RUN TEST OF SYMMETRY

Ayman Baklizi

Department of Mathematics and Physics
College of Arts and Sciences
Qatar University
Doha, Qatar
a.baklizi@qu.edu.qa

ABSTRACT

Assume that we have N independent observations from a continuous distribution with known median, assumed zero without any loss of generality. We want to test whether the distribution is symmetric about zero. Various tests are proposed in the literature for this hypothesis. Baklizi (2007) introduced a test based on a trimmed longest run statistic in a suitably defined sequence of Bernoulli trials. The test was shown by simulation to have a performance at least about that of its competitors. However, the distribution of this test statistic does not have a simple closed form. In this paper we shall consider various approximations of the tail areas of this test statistic and compare their performance.

Key Words: Symmetry, Runs Test, Asymptotic Approximation

REFERENCES

- Baklizi, A. A conditional distribution free runs test for symmetry, *Journal of Nonparametric Statistics*, 15(2003), 713 – 718.
- McWilliams, T.P. A distribution-free test for symmetry based on a runs statistic, *Journal of the American Statistical Association*, 85(1990), 1130-1133.
- Modarres, R., & Gastwirth, J.L. A modified runs test for symmetry, *Statistics and Probability Letters*, 31(1996), 107 – 112.
- Modarres, R., and Gastwirth, J. L. Hybrid test for the hypothesis of symmetry, *Journal of Applied Statistics*, 25(1998), 777 – 783.
- Tajuddin, I.H. Distribution-free test for symmetry based on Wilcoxon two- sample test, *Journal of Applied Statistics*, 21(1994), 405 – 416.