

CRAMÉR TYPE LARGE DEVIATIONS FOR TRIMMED L -STATISTICS

Nadezhda Gribkova

Abstract: In this paper, we propose a new approach to the investigation of asymptotic properties of trimmed L -statistics and we apply it to the Cramér type large deviation problem. Our results can be compared with those in Callaert et al. (1982) – the first and, as far as we know, the single article where some results on probabilities of large deviations for the trimmed L -statistics were obtained, but under some strict and unnatural conditions. Our approach is to approximate the trimmed L -statistic by a non-trimmed L -statistic (with smooth weight function) based on Winsorized random variables. Using this method, we establish the Cramér type large deviation results for the trimmed L -statistics under quite mild and natural conditions.

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