Discrete approximation theorems for statistics related to Bernoulli variables

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We estimate the accuracy of discrete approximations to the distributions of 2-runs and $N(k_1, k_2)$ statistic. Let η_i, $(i = 1, 2, \dots)$ be independent Bernoulli variables, $\xi_j = \eta_j\eta_{j+1}$. The sum $S = \xi_1 + \cdots + \xi_n$ is called 2-runs statistic. Let $Y_j = (1 - \eta_{j-m+1}) \cdots (1 - \eta_{j-k_1})\eta_{j-k_2} \cdots \eta_{j-1}\eta_j$. Then $Z = Y_m + Y_{m+1} + \cdots + Y_n$ is called $N(k_1, k_2)$ statistics. It is proved that for two-parametric approximations the accuracy is at least of the order $O(n^{-1/2})$. Our results are closely related to the results of [1, 2].

References

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