An Elementary Approach to the Asymptotic Normality of the Stirling Numbers

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Abstract

In this study, we mention an elementary approach to display the asymptotic normality to the form of inclusion-exclusion. One of the most representative cases is the Stirling numbers of the second kind, which is used to numerous fields such as the combination, probability, and even statistics connecting with the left-truncated generalized Poisson distribution. In the aspect of the asymptotic estimates, it has many great properties so that it was carefully studied with various technical approaches to the estimates of the value on the different range, the estimate of the summation, i.e. Bell number, and the asymptotic behavior of the local limit theorem, etc. The interesting thing is that the elementary approach we mention is enough to cover all of the above results. We thus apply this approach to other general forms of inclusion-exclusion.