

Convergence rate for CLT of maxima in cubes

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ABSTRACT

Let $\{\mathbf{X}_i, i = 1, 2, \dots, n\}$ be a random sample from a uniform distribution over a d -dimensional cube. A point \mathbf{X}_i is said to be controlled by another point \mathbf{X}_j if each component of \mathbf{X}_i is not larger than the corresponding component of \mathbf{X}_j . A point \mathbf{X}_i is said to be a maximum point in $\{\mathbf{X}_i, i = 1, 2, \dots, n\}$ if it is not controlled by any other points. An interesting problem is to investigate the limiting behavior of K_n , the number of maximum points in $\{\mathbf{X}_i, i = 1, 2, \dots, n\}$, as n tends to infinity.

If $d = 2$, the problem can be reduced to a record problem and both the exact as well as the limiting distributions are known, in explicit form. Recently, some colleagues and I obtained the central limit theorem with certain convergence rate by applying the Stein method for the general d .