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THE CONDITION FOR AN APPROXIMATION OF POISSON DISTRIBUTION TO BERNOULLI SUMS IN MULTIVARIATE DISTRIBUTION

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§ 1. Summary.

K. Kawamura [1] has discussed that a condition is shown and it plays as sufficient condition for an approximation of Poisson distribution to the sum of Bernoulli sequences and he has investigated the structure of Poisson distribution in multivariate case. C. Liu [2] also has discussed an approximation to the sum of variable (non-identically distributed) Bernoulli sequences.

In this paper the converse assertion is discussed, that is, the condition is essential for the approximation of Poisson distribution to the sum of independent Bernoulli sequences in multivariate case. The notations and discussion will prepare the break through in the case of variable Bernoulli sequences.

§ 2. Notations and definitions.

$k=(k_1, k_2, \cdots, k_n)$

where coordinates k_j $(j=1, 2, \cdots, n)$ are non-negative integers,

$0=(0, 0, \cdots, 0)$; zero-vector,

$E_0=\{0, 1\}^n$, $E=\{0, 1\}^n-0$, $i\in E_0$,

$\# k$; the number of positive coordinates in a vector k.

An ordering for $i\in E_0$ in 3-dimensional case $(n=3)$;

$$i=\begin{cases}(0, 0, 0)=000 & \# i=0, \\ (1, 0, 0)=100 & \\ (0, 1, 0)=010 & \# i=1, \\ (0, 0, 1)=001 & \\ (1, 1, 0)=110 & \\ (1, 0, 1)=101 & \# i=2, \\ (0, 1, 1)=011 & \\ (1, 1, 1)=111 & \# i=3.\end{cases} \tag{2.1}$$

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