On the Singularity of Random $(0, 1, \ldots, K)$ - matrices

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abstract

For $n \times n$ matrix M_n whose elements are chosen at random from $\{0, 1, \ldots, K\}$, set $P_n = P(M_n is\ singular)$. Using a generalization of Littelwood-Offord lemma for K - valued case we show that $P_n = O(n^{-\frac{1}{2}})$, $n \to \infty$. This is a generalization of Komlós result for (0,1) - matrices