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Erdős, Pál; Rényi, Alfréd
On two problems of information theory (In English)
Publ. Math. Inst. Hung. Acad. Sci., Ser. A 8, 229-243 (1963).

Let U be the set of all 2^n sequences $(\varepsilon_1, ..., \varepsilon_n)$ where $\varepsilon_k = 0$ or 1 ($k = 1, ..., n$). Let M be an $s \times n$ matrix whose elements are 0 or 1. Let $u_1, ..., u_s$ be the rows of M. For $u = (\varepsilon_1, ..., \varepsilon_n)$ in U and $u' = (\varepsilon'_1, ..., \varepsilon'_n)$ in U let $(u, u') = \sum_{k=1}^{n} \varepsilon_k \varepsilon'_k$ and $c(u, u') = n - \sum_{k=1}^{n} (\varepsilon_k - \varepsilon'_k)^2$. M is called an A-matrix [resp., a B-matrix] if every element u of U is uniquely determined by the values of $(u, u_1), ..., (u, u_s)$ [resp., the values of $c(u, u_1), ..., c(u, u_s)$]. Let $A(n)$ [resp. $B(n)$] denote the minimal value of s for which there exists an $s \times n$ A-matrix [resp., B-matrix]. Results on the asymptotic (with n) behavior of $A(n)$ and $B(n)$ are given.

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