
Zbl 151.03501
Erdős, Pál
On some properties of prime factors of integers (In English)
Nagoya Math. J. 27, 617-623 (1966). [0027-7630]

Let $n = \prod_{i=1}^{\nu(n)}$ be the canonical decomposition of an integer $n > 1$. Define for $2 \leq j \leq \nu(n)$

$$\prod_{i=1}^{j-1} p_i^{\alpha i} = p_j^{\gamma_j(n)}$$

and set

$$\max_{2 \leq j \leq \nu(n)} \gamma_j(n) = P(n).$$

The author proves the following results:
(1) for almost all integers n (i. e. for all integers n but possibly a sequence of integers of density 0) one has

$$P(n) = (1 + o(1)) \log_3 n / \log_4 n;$$

(2) there is a continuous strictly increasing function $\varphi(c)$ with $\varphi(0) = 0, \varphi(\infty) = 1$ such that for almost all integers n

$$\frac{1}{\log_2 n} \sum_{\gamma_j(n) \leq c} 1 \to \varphi(c);$$

(3) the density of integers n for which $\min_{2 \leq j \leq \nu(n)} \gamma_i(n) < c/\log_2 n$ is given by $\psi(c)$, where $\psi(c)$ is a continuuous strictly increasing function with $\psi(0) = 0, \psi(\infty) = 1$. Here, $\log_1 n = \log n$ and $\log_k n = \log(\log_{k-1} n)$ for $k = 2, 3, 4$.

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Classification:
11N25 Distribution of integers with specified multiplicative constraints