
Zbl 012.01102
Erdős, Pál
On the difference of consecutive primes. (In English)
Q. J. Math., Oxf. Ser. 6, 124-128 (1935).

The author proves that there exists an absolute constant c_1 such that (p_n denoting the n-th prime) for an infinity of n

$$p_{n+1} - p_n > c_1 \frac{\log p_n \log\log p_n}{(\log\log\log p_n)^2},$$

this being an appreciable improvement on previous results (see *E. Westzynthuis* Zbl 003.24601 and *G.Ricci* Zbl 010.24801). It is first proved that for any m, one can find consecutive integers $z, z+1, ..., z+l$ each of which is divisible by at least one of $p_1, ..., p_m$ and with

$$z < p_1 ... p_m,\ l > \frac{c_2 p_m \log p_m}{(\log\log p_m)^2}.$$

The proof depends on Brun's method and on an ingenious division of primes into classes. The main result follows on taking p_m to be the prime next below $\frac{1}{2}\log p_n$.

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Classification:
11N05 Distribution of primes