Zbl 023.29801
Erdős, Pál
The difference of consecutive primes. (In English)
Duke Math. J. 6, 438-441 (1940). [0012-7094]

Let p_n denote the n-th prime, and let $A = \liminf \frac{p_{n+1}-p_n}{\log n}$. *Hardy* and *Littlewood* proved a few years ago, by using the Riemann Hypothesis (=R.H.) that $A \le \frac{2}{3}$ (not yet published), and *R.A.Rankin* [Proc. Cambridge Philos. Soc. 36, 255-266 (1940; Zbl 025.30702)] recently proved, again by using R. H. that $A \le \frac{3}{5}$. Depending on Brun's method the author proves without R. H. that $A < 1 - c$ for a certain $c > 0$. Denote by $q_1 < q_2 \cdots < q_y$ the primes not exceeding n. Then the author enunciates the following conjecture: $\sum_{i=1}^{y-1}(q_{i+1} - q_i)^2 = O(n \log n)$. This is, if true, a stronger result than that of *H.Cramér* [Acta Arith. 2, 23-46 (1936; Zbl 015.19702)].

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Classification:
11N05 Distribution of primes