
Zbl 435.10025
Erdős, Paul; Straus, E.G.
Remarks on the differences between consecutive primes. (In English)
Elem. Math. 35, 115-118 (1980). [0013-6018]

Define $F(n,k)$, to be the number of solution of $p_j - p_i = 2k$, $(p_j \leq n)$, and let $f(n,k)$ be the number for which $j = i+1$. This paper is concerned with the behaviour as $n \to \infty$ of the maximum values of $f(n,k)$ and $F(n,k)$, and with the least values (k_n and K_n respectively) for which the maxima are attained. Hardy and Littlewood gave a conjectured asymptotic formula for $F(n,k)$, for fixed k. On the assumption of this it is shown that

$$f(n,k_n)/\{n(\log n)^{-2}\}\to\infty$$

and that $k_n \to infty$. In contrast it is shown that

$$F(n,K_n)/\{n(\log\log n)(\log n)^{-2} \gg 1$$

without any hypothesis.

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Classification:
11N05 Distribution of primes
11N35 Sieves

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differences between consecutive primes; most frequent difference; Hardy- Littlewood prime-pair conjecture