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An asymptotic formula in additive number theory. II. (In English)

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[Part I, cf. Acta Arith. 28, 405-412 (1976; Zbl 278.10047)]

Let $\{b_j\}$ be a sequence of integers satisfying $3 \leq b_1 < b_2 < b_3 < \dots$ and $\sum_{j=1}^{\infty} \frac{1}{b_j} < \infty$. Suppose $\sum_{b_j \leq x} 1 = 0\left(\frac{x}{\log x \log\log x}\right)$. Then the authors prove that the equation $n = p+t$ where p is a prime and t is an integer not divisible by any b_j has $\frac{\alpha n}{\log n} + o\left(\frac{n}{\log n}\right)$ solutions and in particular has at least one solution for all sufficiently large n. Also the authors show that if a certain unproved hypothesis holds then the same result can be established under the slightly milder restriction $\sum_{b_j \leq x} 1 = o\left(\frac{x}{\log x}\right)$.

Classification:
11P32 Additive questions involving primes
11N37 Asymptotic results on arithmetic functions
11N35 Sieves

Keywords:
Goldbach conjecture; Brun's Sieve; primitive abundant numbers