

Zeitschrift: L'Enseignement Mathématique
Herausgeber: Commission Internationale de l'Enseignement Mathématique
Band: 28 (1982)
Heft: 1-2: L'ENSEIGNEMENT MATHÉMATIQUE

Artikel: ON THE NUMBER OF RESTRICTED PRIME FACTORS OF AN INTEGER. III
Autor: Norton, Karl K.

Bibliographie
DOI: <https://doi.org/10.5169/seals-52232>

Nutzungsbedingungen

Die ETH-Bibliothek ist die Anbieterin der digitalisierten Zeitschriften. Sie besitzt keine Urheberrechte an den Zeitschriften und ist nicht verantwortlich für deren Inhalte. Die Rechte liegen in der Regel bei den Herausgebern beziehungsweise den externen Rechteinhabern. [Siehe Rechtliche Hinweise.](#)

Conditions d'utilisation

L'ETH Library est le fournisseur des revues numérisées. Elle ne détient aucun droit d'auteur sur les revues et n'est pas responsable de leur contenu. En règle générale, les droits sont détenus par les éditeurs ou les détenteurs de droits externes. [Voir Informations légales.](#)

Terms of use

The ETH Library is the provider of the digitised journals. It does not own any copyrights to the journals and is not responsible for their content. The rights usually lie with the publishers or the external rights holders. [See Legal notice.](#)

Download PDF: 02.04.2025

ETH-Bibliothek Zürich, E-Periodica, <https://www.e-periodica.ch>

The theorem now follows from (5.8), (5.9), (5.10), and (5.15). Q.E.D.

Since

$$E(x) \leq \sum_{p \leq x} p^{-1} = \log_2 x + O(1) \quad \text{for } x \geq 2,$$

one would always want to choose $v \leq \log_2 x$. Thus (1.23) is superior to (5.4) whenever $y \geq (\log_2 x)^{1/2}$. Furthermore, consideration of derivatives shows that

$$y - v - y \log(y/v) \leq (p_1 - 1)v - y \log p_1 \quad \text{for } 0 < v \leq y \leq p_1 v,$$

and hence Lemma 5.3 is superior to Theorem 1.21 whenever

$$1 \leq v \leq y \leq p_1 v - v^{1/2}.$$

REFERENCES

- [1] DEKONINCK, J.-M. and D. HENSLEY. Sums taken over $n \leq x$ with prime factors $\leq y$ of $z^{\Omega(n)}$, and their derivatives with respect to z . *J. Indian Math. Soc. (N.S.)* 42 (1978), 353-365.
- [2] ERDÖS, P. et J.-L. NICOLAS. Sur la fonction : nombre de facteurs premiers de N . *Ens. Math.* 27 (1981), 3-30.
- [3] ERDÖS, P. and A. SÁRKÖZY. On the number of prime factors of integers. *Acta Sci. Math. (Szeged)* 42 (1980), 237-246.
- [4] HALÁSZ, G. Remarks to my paper "On the distribution of additive and the mean values of multiplicative arithmetic functions". *Acta Math. Acad. Sci. Hungar.* 23 (1972), 425-432.
- [5] HARDY, G. H. and S. RAMANUJAN. The normal number of prime factors of a number n . *Quart. J. Math.* 48 (1917), 76-92.
- [6] HARDY, G. H. and E. M. WRIGHT. *An introduction to the theory of numbers*. 3rd ed., Oxford Univ. Press, Oxford, 1954.
- [7] KOLESNIK, G. and E. G. STRAUS. On the distribution of integers with a given number of prime factors. *Acta Arith.* 37 (1980), 181-199.
- [8] KUBILIUS, J. P. *Probabilistic methods in the theory of numbers*. Amer. Math. Soc. Translations of Mathematical Monographs, vol. 11, Providence, R.I., 1964.
- [9] ——— On large deviations of additive arithmetic functions. *Trudy Mat. Inst. Steklov.* 128 (1972), 163-171 (= *Proc. Steklov Inst. Math.* 128 (1972), 191-201).
- [10] LAURINČIKAS, A. On large deviations of arithmetic functions. *Litovsk. Mat. Sb.* 16 (1976), No. 1, 159-171 (= *Lithuanian Math. Trans.* 16 (1976), 97-104).
- [11] NEWMAN, M. Isometric circles of congruence groups. *Amer. J. Math.* 91 (1969), 648-656.
- [12] NORTON, K. K. Numbers with small prime factors, and the least k -th power non-residue. *Mem. Amer. Math. Soc.* 106 (1971).
- [13] ——— On the number of restricted prime factors of an integer. I. *Illinois J. Math.* 20 (1976), 681-705.

- [14] — On the number of restricted prime factors of an integer. II. *Acta Math.* 143 (1979), 9-38.
- [15] RAMANUJAN, S. *Collected papers*. Cambridge Univ. Press, Cambridge, 1927. (Reprinted by Chelsea, New York, 1962.)
- [16] SÁRKÖZY, A. Remarks on a paper of G. Halász. *Period. Math. Hungar.* 8 (1977), 135-150.
- [17] SELBERG, A. Note on a paper by L. G. Sathe. *J. Indian Math. Soc. (N.S.)* 18 (1954), 83-87.
- [18] TURÁN, P. On a theorem of Hardy and Ramanujan. *J. London Math. Soc.* 9 (1934), 274-276.
- [19] — Über einige Verallgemeinerungen eines Satzes von Hardy und Ramanujan. *J. London Math. Soc.* 11 (1936), 125-133.

(Reçu le 6 février 1981)

Karl K. Norton

1895 Alpine Ave., Apt. 36
Boulder, Colorado 80302
U.S.A.