A BOUNDS TAUBERIAN THEOREM

ALLEN STENGER

Abstract. We weaken the hypothesis and the conclusion of a Hardy–Littlewood Tauberian theorem, and apply the new theorem to deduce asymptotic behavior of the coefficients of an exponentiated lacunary series.

Mathematics subject classification (2010): 40E05, 41A60.
Keywords and phrases: Tauberian theorems, asymptotics of sequences, lacunary series.

REFERENCES

[1] G. H. HARDY, *On certain oscillating series*, Q. J. Math. **38** (1907) 269–288. Reprinted with corrections in *Collected Papers of G. H. Hardy*, volume VI, pp. 146–167; Oxford Univ. Press, Oxford, 1974.

[2] G. H. HARDY, J. E. LITTLEWOOD, *Tauberian theorems concerning power series and Dirichlet's series whose coefficients are positive*, Proc. Lond. Math. Soc. (2) **13** (1914) 174–191. Reprinted with corrections in *Collected Papers of G. H. Hardy*, volume VI, pp. 510–529; Oxford Univ. Press, Oxford, 1974.

[3] J. KOREVAAR, *Tauberian Theory: A Century of Developments*, Springer, Berlin, 2004.

[4] G. STOICA, *Problem proposed: 11849*, Amer. Math. Monthly **122** (2015) 605.

[5] G. STOICA, A. STENGER, *Asymptotics for Coefficients: 11849*, Amer. Math. Monthly **124** (2017) 378.

[6] E. C. TITCHMARSH, *The Theory of Functions*, Second edition, Oxford Univ. Press, Oxford, 1939.

Journal of Classical Analysis
www.ele-math.com
jca@ele-math.com