POWER MEANS OF THE HURWITZ ZETA FUNCTION OVER LARGE INTERVALS

A. C. L. ASHTON

Abstract. In this note we derive asymptotic formulas for power means of the Hurwitz zeta function over large intervals.

Mathematics subject classification (2010): 11M35, 34E10.
Keywords and phrases: Hurwitz zeta function, asymptotics.

REFERENCES

[1] J. ANDERSSON, *Mean value properties of the Hurwitz zeta-function*, Math. Scand. **71**, 1992., 295–300.

[2] A. C. L. ASHTON & A. S. FOKAS, *Relations among the Riemann and Hurwitz zeta-functions and their products*, Symmetry **11**(6), 2019., 754–771.

[3] F. V. ATKINSON, *The mean-value of the Riemann zeta function*, Acta. Math. **81**, 1949., 353–376.

[4] R. BALASUBRAMANIAN, *A note on Hurwitz's zeta-function*, Ann. Acad. Sci. Fenn. Ser. A I Math: **4**, 1979., 41–44.

[5] N. BLEISTEIN, *Uniform asymptotic expansion of integrals with stationary point near algebraic singularity*, Comm. Pure Appl. Math. **19**(4), 1966., 353–370.

[6] J. BOURGAIN, *Decoupling, exponential sums and the Riemann zeta function*, J. Amer. Math. Soc. **30**(1), 2017., 205–224.

[7] A. FERNANDEZ & A. S. FOKAS, *Asymptotics to all orders of the Hurwitz zeta function*, J. Math. Anal. Appl. **465**(1), 2018., 423–458.

[8] C. FERREIRA & J. L. LÓPEZ, *Asymptotic expansions of the Hurwitz–Lerch zeta function*, J. Math. Analysis. Appl. **298**(1), 2004., 210–224.

[9] K. KALIMERIS & A. S. FOKAS, *A Novel Integral Equation for the Riemann Zeta Function and Large t -Asymptotics*, Math. **7**(7), 2019., 650.

[10] M. KATSURADA & K. MATSUMOTO, *Explicit formulas and asymptotic expansions for certain mean square of Hurwitz zeta-functions I*, Math. Scand. **78**(2), 1996., 161–177.

[11] K. MATSUMOTO, *Recent Developments in the mean square theory of the Riemann zeta and other zeta-functions*, In Number Theory (Springer), 2000., 241–286.

[12] V. V. RANE, *On Hurwitz zeta-function*, Math. Ann. **264**(2), 1983., 137–145.

[13] V. V. RANE, *A new approximate functional equation for Hurwitz zeta function for rational parameter*, Proc. Ind. Aca. Sci. **107**(4), 1997., 377–285.

[14] B. SAFFARI & R. C. VAUGHAN, *On the fractional parts of x/n and related sequences II*, Ann. Inst. Fourier **27**(2), 1977., 1–30.

[15] L. A. SKINNER, *Stationary Phase Theory and Passage through Resonance*, J. Math. Analysis. Appl. **205**(1), 1997., 186–196.

[16] E. C. TITCHMARSH, *The theory of functions*, Oxford University Press, 1952.

[17] E. C. TITCHMARSH & D. R. HEATH-BROWN, *The theory of the Riemann zeta-function*, Oxford University Press, 1986.

[18] W. ZHANG, *On the mean square value of the Hurwitz zeta-function*, Illinois J. Math. **38**(1), 1994., 71–78.

© ELEMENT, Zagreb
Paper JCA-15-05

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