

## ON UNIFORM CONVERGENCE OF TRIGONOMETRIC INTEGRAL-SERIES

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**Abstract.** In this paper, we give sufficient conditions for the uniform regular convergence of trigonometric integral-series, which are also necessary if the sequence of functions is non-negative. The new results also bring necessary and sufficient conditions for the uniform regular convergence of trigonometric integral-series in complex form.

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### REFERENCES

- [1] T. W. CHAUNDY, A. E. JOLLIFFE, *The uniform convergence of a certain class of trigonometric series*, Proc. London Math. Soc. **15** (1916), 214–216.
- [2] A. DEBERNARDI, *Uniform convergence of sine transforms of general monotone functions*, Math. Nachr. **290** (17–18) (2017), 2815–2825.
- [3] A. DEBERNARDI, *Uniform convergence of double sine transforms of general monotone functions*, Anal. Math. **43** (2) (2017), 193–217.
- [4] M. DYACHENKO, E. LIFLYAND AND S. TIKHONOV, *Uniform convergence and integrability of Fourier integrals*, J. Math. Anal. Appl. **372** (1) (2010), 328–338.
- [5] K. DUZINKIEWICZ AND B. SZAL, *On the uniform convergence of double sine series*, Colloq. Math. **151** (2018), 71–95.
- [6] M. DYACHENKO, A. MUKANOV, AND S. TIKHONOV, *Uniform convergence of trigonometric series with general monotone coefficients*, Canad. J. Math. **71** (6) (2019), 1445–1463.
- [7] R. E. EDWARDS, *Fourier Series A Modern Introduction*, vol. 1, sec. ed., Springer-Verlag New York Heidelberg Berlin (1979).
- [8] M. KUBIAK AND B. SZAL, *Uniform convergence of trigonometric series with  $p$ -bounded variation coefficients*, Bull. Belg. Math. Soc. Simon Stevin **27** (2020), 89–110.
- [9] M. KUBIAK AND B. SZAL, *A sufficient condition for uniform convergence of trigonometric series with  $p$ -bounded variation coefficients*, Results Math. **78** (2023), no. 6, Paper No. 236.
- [10] M. KUBIAK AND B. SZAL, *A sufficient condition for uniform convergence of double sine series with  $p$ -bounded variation coefficients*, arXiv preprint arXiv:2305.09040 (2023).
- [11] P. KÓRUS, X. Z. KRASNIQI AND B. SZAL, *Uniform convergence of sine integral-series*, Quaest. Math. **45** (5) (2022), 711–722.
- [12] P. KÓRUS, *On the uniform convergence of special sine integrals*, Acta Math. Hungar. **133** (1–2) (2011), 82–91.
- [13] P. KÓRUS, *Uniform convergence of double trigonometric integrals*, Colloq. Math. **154** (2018), 107–119.
- [14] P. KÓRUS AND F. MÓRICZ, *Generalizations to monotonicity for uniform convergence of double sine integrals over  $\mathbb{R}_+^2$* , Studia Math. **201** (3) (2010), 287–304.
- [15] L. LEINDLER, *On the uniform convergence and boundedness of a certain class of sine series*, Anal. Math. **27** (4) (2001), 279–285.
- [16] E. LIFYAND AND S. TIKHONOV, *The Fourier transforms of general monotone functions*, Analysis and Mathematical Physics, Trends in Mathematics (Birkhäuser, 2009), 373–391.

- [17] E. LIFYAND AND S. TIKHONOV, *A concept of general monotonicity and applications*, Math. Nachr. **285** (8–9), (2011) 1083–1098.
- [18] F. MÓRICZ, *On the uniform convergence of sine integrals*, J. Math. Anal. Appl. **354** (1) (2009), 213–219.
- [19] F. MÓRICZ, *On the uniform convergence of double sine integrals over  $\mathbb{R}_+^2$* , Analysis (Munich) **31** (2) (2011), 191–204.
- [20] F. MÓRICZ, *Pointwise convergence of double Fourier integrals of functions of bounded variation  $\mathbb{R}^2$* , J. Math. Anal. Appl. **424** (2) (2015), 1530–1543.
- [21] S. TIKHONOV, *On uniform convergence of trigonometric series*, Mat. Zametki **81** (2) (2007), 304–310, translated in Math. Notes, **81** (2) (2007), 268–274.
- [22] S. TIKHONOV, *Trigonometric series with general monotone coefficients*, J. Math. Anal. Appl. **326** (1) (2007), 721–735.
- [23] S. TIKHONOV, *Best approximation and moduli of smoothness: computation and equivalence theorems*, J. Approx. Theory **153** (1) (2008), 19–39.