Zeitschrift: L'Enseignement Mathématique
Herausgeber: Commission Internationale de l'Enseignement Mathématique
Band: 22 (1976)
Heft: 1-2: L'ENSEIGNEMENT MATHÉMATIQUE

Artikel: SUMMABILITY OF SINGULAR VALUES OF L^2 KERNELS. ANALOGIES WITH FOURIER SERIES
Autor: Cochran, James Alan
Kapitel: 5. ACKNOWLEDGEMENT
DOI: https://doi.org/10.5169/seals-48180

Nutzungsbedingungen
Die ETH-Bibliothek ist die Anbieterin der digitalisierten Zeitschriften auf E-Periodica. 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. Das Veröffentlichen von Bildern in Print- und Online-Publikationen sowie auf Social Media-Kanälen oder Webseiten ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. Mehr erfahren

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. La reproduction d'images dans des publications imprimées ou en ligne ainsi que sur des canaux de médias sociaux ou des sites web n'est autorisée qu'avec l'accord préalable des détenteurs des droits. En savoir plus

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. Publishing images in print and online publications, as well as on social media channels or websites, is only permitted with the prior consent of the rights holders. Find out more

Download PDF: 11.03.2026

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

THEOREM 4.5. *If* $K^{(s)}(x, y)$ *belongs both to* Lip (α, p) *and to* Lip β, *then* $\sum (1/\mu_n)^\gamma$ *converges for all* $\gamma > \rho$ *where* ρ *is as given in Theorem 2.10.*

Naturally, these theorems also contain the analogues of the Zygmund and Waraszkiewicz results, Theorems 2.4, 2.5.

In closing it is worth remarking that all of the above kernel function results are equally as sharp as the corresponding Fourier series results since, as we have seen earlier, for periodic difference kernels the singular values and the related Fourier coefficients are essentially reciprocals. In view of the Weyl-Chang inequalities (4.2), moreover, these theorems amplify and extend our knowledge concerning the growth behavior of the *characteristic* values of "smooth" kernels (see [22], [11], for example).

5. ACKNOWLEDGEMENT

Our original interest in this entire inquiry owed much to numerous stimulating discussions with our former colleague D. W. Swann.

REFERENCES

[1] BARY, N. K. *A treatise on trigonometric series.* Vol. II (translated from the 1961 Russian ed. by M. F. Mullins). Pergamon, New York, 1964.

[2] BERNSTEIN, S. N. Sur la convergence absolue des séries trigonométriques. *C.R. Acad. Sci. Paris 158* (1914), pp. 1661-1663.

[3] —— On the absolute convergence of trigonometric series. *Soobshch. Khar'kov. Mat. Obshch. (2) 14* (1914), pp. 139-144 (in Russian); *ibid.* (1915) pp. 200-201; see also *Collected Works*, Vol. I, 1952, pp. 217-223 (in Russian).

[4] —— Sur la convergence absolue des séries trigonométriques. *C.R. Acad. Sci. Paris 199* (1934), pp. 397-400.

[5] CARLEMAN, T. Über die Fourierkoeffizienten einer stetigen Funktion. *Acta Math. 41* (1918), pp. 377-384; see also *Edition complète des articles*, Malmö, 1960, pp. 15-22.

[6] —— Zur Theorie der linearen Integralgleichungen. *Math. Zeit. 9* (1921), pp. 196-217; see also *Edition complète des articles*, Malmö 1960, pp. 79-100.

[7] CHANG, S. H. A generalization of a theorem of Lalesco. *J. London Math. Soc. 22* (1947), pp. 185-189.

[8] —— On the distribution of the characteristic values and singular values of linear integral equations. *Trans. Amer. Math. Soc. 67* (1949), pp. 351-367. MR 11, 523.

[9] —— A generalization of a theorem of Hille and Tamarkin with applications. *Proc. London Math. Soc. (3) 2* (1952), pp. 22-29. MR 13, 950.

[10] COCHRAN, J. A. The existence of eigenvalues for the integral equations of laser theory. *Bell Syst. Tech. J. 44* (1965), pp. 77-88. MR 30. 1368.

[11] —— *The analysis of linear integral equations.* McGraw-Hill, New York, 1972.