

is the case, for example, for the series to sequence transform: $A_n = \sum_{\nu=0}^n u_\nu x_n^\nu$, where $x_n \uparrow 1$ as $n \rightarrow \infty$ so slowly that $n^\nu x_n^n \rightarrow 0$ for all integers ν . (Received March 17, 1945.)

92. F. T. Wang: *Strong summability of Fourier series.*

Let $S_n(x)$ be the partial sum of the Fourier series $f(t) \sim a_0/2 + \sum_{n=1}^{\infty} (a_n \cos nt + b_n \sin nt)$ at $t=x$, and let $\phi(t) = (1/2) \{f(x+t) + f(x-t) - 2S\}$. The following result gives the solution of a problem proposed by Hardy and Littlewood (Fund. Math. vol. 25 (1935)): If $\int_0^t |\phi(u)| \{1 + \log^+ |\phi(u)|\} du = o(t)$ as $t \rightarrow 0$, then $\sum_{\nu=0}^n |S_\nu(x) - S|^2 = o(n)$ as $n \rightarrow \infty$. (Received March 12, 1945.)

93. F. T. Wang: *Tauberian theorem of oscillating series.*

Let $\sigma_n^{(r)}$ be the r th Cesàro mean of the series $\sum_{n=0}^{\infty} a_n$; and $\sigma_n^{(r)} - s = o(n^{\delta-1})$ as $n \rightarrow \infty$ for $r > 0$, $0 < \delta < 1$; and $a_n > -Kn^{-\delta}$; then the series $\sum_{n=0}^{\infty} a_n$ converges to S . An example shows that the order in the above inequality is the best possible in its kind. (Received March 12, 1945.)

94. H. J. Zimmerberg: *A class of definite boundary value problems.*

This paper is concerned with an extension of the results of Reid (Trans. Amer. Math. vol. 52 (1942) pp. 381-425) to differential systems consisting of the vector differential equation $y' = A(x)y + \lambda B(x)y$, and the two-point boundary conditions $(M_0 + \lambda M_1)y(a) + (N_0 + \lambda N_1)y(b) = 0$, in which the elements of the coefficient matrices of the system are allowed to be complex-valued. It is shown that under suitable assumptions of definiteness such systems possess fundamental properties similar to those previously established for real-valued, definitely self-adjoint problems by Bobonis (doctoral dissertation, Chicago, 1939; *Contributions to the calculus of variations*, 1938-1941, pp. 99-138). In particular, this study yields new results for the definitely self-adjoint systems considered by Bobonis. It is also shown that certain important types of boundary value problems associated with the second variation of an isoperimetric problem of Bolza in the calculus of variations which are not definitely self-conjugate adjoint do belong to this new class of problems. (Received March 19, 1945.)

GEOMETRY

95. L. K. Hua: *Geometries of matrices. I. Generalizations of von Staudt's theorem.*

A geometry is studied whose points are defined as the symmetric matrices Z of degree n ; a class of points at infinity is to be added. The group of transformations of this geometry consists of all mappings $Z = (AZ^* + B)(CZ^* + D)^{-1}$ where the matrices A, B of degree n form the upper half of a symplectic matrix S of degree $2n$ while C, D form the lower half of S . The question of equivalence of systems of points with regard to this group is investigated. A generalization of von Staudt's theorem is obtained. Finally, some other geometries of a similar nature are discussed. (Received February 10, 1945.)

96. L. K. Hua: *Geometries of matrices. I₁. Arithmetical construction.*

The paper forms an illustration and a supplement to the first part. The geometry of two-rowed matrices is studied in more detail. It is shown that one of the conditions appearing in the generalization of von Staudt's theorem is redundant. (Received February 10, 1945.)