ABSTRACTS OF PAPERS

SUBMITTED FOR PRESENTATION TO THE SOCIETY

The following papers have been submitted to the Secretary and the Associate Secretaries of the Society for presentation at meetings of the Society. They are numbered serially throughout this volume. Cross references to them in the reports of the meetings will give the number of this volume, the number of this issue, and the serial number of the abstract.

90. R. P. Agnew: *Cores of complex sequences and of their transforms.*

It is shown that a regular transformation $\sigma_n=\sum_{k=1}^{n}a_{nk}s_k$, determined by a matrix a_{nk} of complex constants, transforms each definitely divergent sequence s_n (K. Knopp, Mathematische Zeitschrift, vol. 31, pp. 97–127) into a definitely divergent sequence σ_n if and only if there is an index K such that a_{nk} is real and non-negative for all $k\geqq K$. This condition is also necessary and sufficient to ensure that the core ("Kern" of Knopp, loc. cit.) of each sequence s_n contain the core of its transform σ_n. Some related results are obtained, including a characterization different from but equivalent to Knopp's definition of definite divergence. Finally a theorem of Steinhaus type (Prace Matematyczno-fizyczne, vol. 22, pp. 121–134) is given with comments relevant to cores. (Received January 17, 1938.)

91. A. A. Albert: *Non-cyclic algebras with pure maximal sub-fields.*

The author modifies the algebras of his paper in the Transactions of this Society, vol. 35 (1933), pp. 112–121, and thereby proves the existence of normal division algebras of degree four over a non-modular field K which are non-cyclic yet have maximal sub-fields $K(j)$, $j^4=g$ in K. This proves the falsity of a recent conjecture on normal division algebras (see introduction of the paper in the Transactions of this Society, vol. 39 (1936), pp. 183–188). (Received January 22, 1938.)

92. E. F. Beckenbach and M. Reade: *Generalizations to space of the Cauchy and Morera theorems.*

The theorems of Cauchy and Morera are generalized for three-space. A typical result is the following: If $x_j(u, v)$, $(j=1, 2, 3)$, are harmonic functions in a domain D, then a necessary and sufficient condition that these functions be the coordinate functions of a minimal surface given in isothermic representation is that for each circle C, lying in and enclosing only points of D, $\sum_{j=1}^{3}[\int_C x_j(u, v)\cdot(du+idv)]^2=0$. (Received January 26, 1938.)

93. Garrett Birkhoff: *Dependent probabilities and spaces (L).*

The paper bases the theory of dependent probabilities on the theory of partially ordered function spaces. This formulation makes it possible to include all known cases in a single set of definitions (cf. also abstracts 43-9-320-321). A new theorem, which specializes in the *deterministic* case to von Neumann's mean ergodic theorem, is proved with added generality in the *stochastic* case. (Received January 28, 1938.)