ABSTRACTS OF PAPERS

SUBMITTED FOR PRESENTATION TO THIS 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.

317. Professor C. N. Moore: *On certain equivalent methods of summation.*

Given a series Σa_n and a positive monotonic function of n, λ_n, which becomes infinite with n. If $\lim_{n\to\infty}\Sigma_{m=1}^{n-1}(1-[\lambda_m/\lambda_n])^k a_m$ exists and is equal to A, we say that the series is summable (R,λ_n, k) to the value A. If $\lim_{\omega\to\infty}\Sigma_{m=1}^{\lambda_m<\omega}(1-[\lambda_m/\omega])^k a_m$ exists and is equal to A, we say that the series is summable (R, λ, k) to A. Both methods of summation are due to Marcel Riesz; the latter form is more generally used. It has been shown (Comptes Rendus, vol. 152 (1911), p. 1651) by Riesz that summability (R, λ, k), where $\lambda_n=n$, is equivalent to summability (C, k) for all real values of $k>-1$, and later (Proceedings of the London Mathematical Society, (2), vol. 22 (1923–24), p. 418) that summability (R, λ_n, k) for the same choice of λ is equivalent to summability (C, k) for $-1<k\leqq 1$. In the present paper it is shown that summability(R, λ_n, k) for the case $\lambda_n=c(n+q+[\psi_n/n])$, where ψ_n represents a function of n that remains bounded for all values of n and c and q are constants $(c>0)$, is equivalent to summability(R,λ_n,k) for $\lambda_n=n$, provided $-1<k\leqq 1$. In view of Riesz's second result, quoted above, this also involves the equivalence of the former type of summability with summability (C, k) if $-1<k\leqq 1$. (Received August 1, 1930.)

318. Professors Einar Hille and J. D. Tamarkin: *On the summability of Fourier series.* Third note.

The authors have continued their investigation of the effectiveness of the methods $[H, q(u)]$ of Hurwitz-Silverman-Hausdorff when applied to the summation of Fourier series. A distinction is made between F (Fejér) and L (Lebesgue) effective methods according as the applicability is ensured merely at regular points or almost everywhere. The authors exhibit sufficient conditions, in part also necessary, for both kinds of effectiveness. These conditions affect the integrability properties of the Fourier cosine transform of $q(u)$, and the continuity of $q(u)$ at the end points of the basic interval (0,1). The paper also contains a study of the integrability properties of Fourier transforms. (Received August 7, 1930.)

* See pp. 1–2 and p. 45 of the January issue.