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Integration by Parts in the SCP Integral

J. C. Burkill [2] defined the SCP (symmetric Cesaro–Perron) integral to integrate the sum function of every everywhere convergent trigonometric series, and to show that it is a Fourier series he used integration by parts. P. S. Bullen and S. N. Mukhopadhyay [1] found the two-line proof inconclusive and gave a partial proof, while V. A. Skljarenko [3] gave a complete proof that P. S. Bullen found difficult to generalize. The talk's objective was a proof using the methods of variational integration and an equivalent and simpler definition of the integral.

References

[1] P. S. Bullen and S. N. Mukhopadhyay, *Integration by parts formulae for some trigonometric integrals*, Proceedings London Math. Soc. (3) 29 (1974), 159-173. (Math. Rev. 51—825).

[2] J. C. Burkill, *Integrals and trigonometric series*, Proceedings London Math. Soc. (3) 1 (1951) 46-57. Corrigendum ibid. 47 (1983) 192. (Math. Rev. 13—126).

[3] V. A. Skljarenko, *On integration by parts in Burkill's SCP-integral*, Math. of U.S.S.R. Sbornik 40 (1981) 567-582. (Math. Rev. 81k—26009).