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**Approximation of functions by Whittaker's cardinal series.** (English) [Zbl 0582.42002](#)

General inequalities 4, Mem. E. F. Beckenbach, 4th Int. Conf., Oberwolfach/Ger. 1983, ISNM 71, 137-149 (1984).

[For the entire collection see [Zbl 0573.00004](#).]

According to the classical cardinal series theorem any integrable, entire function of exponential type  $\leq \sigma$  can be represented by its cardinal series with nodes  $k\pi/\sigma$ . It is shown that for continuous functions having an absolute integrable Fourier transform or satisfying certain smoothness conditions this representation holds in the limit for  $\sigma \rightarrow \infty$ . Similarly, the derivatives of a function as well as its Hilbert transform can be approximated by the derivatives and the Hilbert transform of the cardinal series, respectively. Estimates for the approximation error are given; these are shown to be best possible.

**MSC:**

[42A10](#) Trigonometric approximation

Cited in **2** Documents

**Keywords:**

[Whittaker's cardinal series](#); [Hilbert transform](#)