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Order estimates of best m–term trigonometric approximations of classes of analytic functions

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Let $C^{\psi}_{\beta,p}$, $1 \le p \le \infty$, be the class of 2π–periodic functions f, represented by the convolutions $f(x) = \frac{a_0}{2} + \frac{1}{\pi}\int\limits_{-\pi}^{\pi} \Psi_{\beta}(x-t)\varphi(t)dt$, $\varphi \perp 1$, $\|\varphi\|_p \le 1$, $a_0 \in \mathbb{R}$, where $\Psi_{\beta}(t) = \sum\limits_{k=1}^{\infty} \psi(k)\cos\left(kt - \frac{\beta\pi}{2}\right)$, $\sum\limits_{k=1}^{\infty}\psi(k) < \infty$, $\psi(k) > 0$, $\beta \in \mathbb{R}$.

Further, let consider the quantities

$$e_m(C^{\psi}_{\beta,p})_s = \sup_{f\in C^{\psi}_{\beta,p}} \inf_{\gamma_m} \inf_{c_k\in\mathbb{C}} \|f(x) - \sum_{k\in\gamma_m} c_k e^{ikx}\|_s, \quad 1 \le p, s \le \infty,$$

where γ_m, $m \in \mathbb{N}$, is an arbitrary set of m integer numbers.

We find that in the case, when sequence $\psi(k)$ decreases to zero not slower than geometric progression, the following estimates are true: $e_m(C^{\psi}_{\beta,p})_s \asymp \psi\left(\left[\frac{m+1}{2}\right]\right)$, where $[a]$ is the integer part of the real number a.