## Approximation by generalized Kantorovich-Kotelnikov sampling operators

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We study approximation properties of the following generalized Kantorovich-Kotelnikov sampling operator

$$\mathcal{K}_j(f;x) = \sum_{k \in \mathbb{Z}^d} \left( m^j \int_{\mathbb{R}^d} f(u) \widetilde{\varphi}(M^j u + k) du \right) \varphi(M^j x + k),$$

where M is a dilation matrix,  $m = |\det M|$ , and  $\tilde{\varphi}$  and  $\varphi$  are appropriate functions. In particular, we consider the case in which  $\varphi$  belongs to a certain subclass of band-limited functions including non-integrable ones and  $\tilde{\varphi}$  is a compactly supported or band-limited function. Under certain smoothness conditions on the functions  $\varphi$ and  $\tilde{\varphi}$ , we obtain that

$$\|f - \mathcal{K}_j(f)\|_{L_p(\mathbb{R}^d)} \le C\omega_n(f, \|M^{-j}\|)_p, \quad f \in L_p(\mathbb{R}^d), \quad j \in \mathbb{Z}_+,$$

where  $\omega_n(f,h)_p$  is the classical modulus of smoothness of order n. The case of approximation in the weighted  $L_p$  spaces for submultiplicative weights is also considered. Several examples of the Kantorovich-Kotelnikov operators generated by the sinc-function and its linear combinations are provided.

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