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Eigenvalues of Hille-Tamarkin operators and geometry of Banach function spaces

Hille-Tamarkin operators on Lebesgue spaces L_p are integral operators with kernels in $L_p(L_{p'})$, where $1 \leq p < \infty$ and $1/p + 1/p' = 1$. It is well-known that their eigenvalues are in $\ell_{\max(p,2)}$. We extend these classical results to more general Banach function spaces X and show that the asymptotic eigenvalue behaviour depends on geometric properties of X like cotype p and p-concavity. The proofs use Weyl numbers, summing operators and interpolation techniques. As an illustration we give some examples in concrete spaces, for instance in Lorentz, Orlicz and Zygmund spaces, which also show the optimality of our general results. The talk is based on joint work with M. Mastyło.