

## Rate of Approximation in Modular Spaces for Nonlinear Integral Operators

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**AMS Classification:** 41A25,41A35,47G10,94A12

**Keywords and phrases:** Rate of approximation, Modular spaces, Orlicz spaces, Nonlinear integral operators, Lipschitz class

In [1] convergence results in Orlicz-type spaces are given for a family of nonlinear integral operators of the form

$$(T_w f)(s) = \int_H K_w(s - h_w(t), f(h_w(t))) d\mu_H(t), \quad w > 0, \quad s \in G, \quad (\text{I})$$

where  $G$  and  $H$  are locally compact topological groups,  $\mu_H$  is the Haar measure on  $\mathcal{B}(H)$  and  $\{h_w\}$  is a family of homeomorphisms  $h_w : H \rightarrow h_w(H) \subset G$ .

Here we study the problem of the order of approximation for the class of operators (I) in the general setting of modular spaces (see [2]). This approach allows us to obtain, in particular, the rate of approximation for the above operators in  $L^p$ -spaces and in Orlicz-type spaces. Furthermore, the general class (I) contains, as particular cases, some classical families of integral operators well known in approximation theory, such as the classical convolution integral operators, the Mellin convolution integral operators and the nonlinear sampling-type operators. Our approach, in the frame of modular spaces, is mainly based on the introduction of a suitable Lipschitz class and of a condition on a family of measures which is linked with the modulars involved. This condition is always fulfilled in classical and Musielak-Orlicz spaces.

## References

- [1] L. Angeloni, G. Vinti, *A unified approach to approximation results with applications to nonlinear sampling theory*, to appear in Int. Journal of Math. Sciences.
- [2] C. Bardaro, J. Musielak, G. Vinti, *Nonlinear Integral Operators and Applications*, De Gruyter Series in Nonlinear Analysis and Appl., New York, Berlin, **9** (2003).