MONOTONICITY PROPERTIES OF ORLICZ SPACES EQUIPPED WITH THE p-AMEMIYA NORM

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In 1932, while introducing a subclass of Banach spaces, W. Orlicz defined a norm by the formula $\|x\|_\Phi^o = \sup\left\{\int_T |x(t)y(t)|d\mu : y \in L_\Psi, I_\Psi(y) \le 1\right\}$, where Φ, Ψ are two Young functions conjugate to each other and $I_\Phi(x) = \int_T \Phi(x(t))d\mu$. In 1955 W.A.J. Luxemburg investigated the conjugate norm to the Orlicz one defined by $\|x\|_\Phi = \inf\left\{\lambda > 0 : I_\Phi\left(\frac{x}{\lambda}\right) \le 1\right\}$. H. Hudzik and L. Maligranda pointed out to the fact that Orlicz and Luxemburg norms are the bounder values of the family of (equivalent to each other) p-Amemiya norms defined by $\|x\|_{\Phi,p} = \inf_{k>0} \frac{1}{k} s_p(I_\Phi(kx))$, where $s_p : \mathcal{R}_+ \to \mathcal{R}_+$, $s_p(u) = (1 + u^p)^{1/p}$, for $1 \le p < \infty$ and $s_\infty(u) = \max\{1, u\}$ for $p = \infty$. During the talk strict monotonicity, lower and upper uniform monotonicities and uniform monotonicity of Orlicz spaces equipped with the p-Amemiya will be presented. It is worth noting that monotonicity properties can be directly applied to the best approximation problem.

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