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The rate of convergence of positive linear operators in weighted spaces. (English summary)
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Given an unbounded, strictly increasing continuous function $\varphi\colon [0,+\infty)\to[0,+\infty)$ with $\varphi(0)=0$ and φ^{-1} uniformly continuous, let $\rho=1+\varphi^2$ be a weight function and $B_\rho([0,+\infty))$ the space of all functions $f\colon[0,+\infty)\to[0,+\infty)$ for which there exists $M>0$ such that $|f(x)|\le M\rho(x)$ for every $x\ge 0$. This space will be endowed with the ρ-norm defined as $\|f\|_\rho:=\sup_{x\ge0}|f(x)|/\rho(x)$ $(f\in B_\rho([0,+\infty)))$.

Moreover, consider the space $C_\rho([0,+\infty))$ of all continuous functions of $B_\rho([0,+\infty))$ and a sequence $(A_n)_{n\ge1}$ of positive linear operators from $C_\rho([0,+\infty))$ into $B_\rho([0,+\infty))$.

The main result of this paper furnishes an estimate of the rate of the convergence

$$\lim_{n\to\infty}\|A_nf-f\|_\rho=0\quad\text{for every } f\in C_\rho^K([0,+\infty)),$$

where $C_\rho^K([0,+\infty))=\{f\in C_\rho([0,+\infty))\colon \lim_{x\to+\infty}f(x)/\rho(x)=K_f<+\infty\}$, by means of the modulus of continuity

$$\omega_\varphi(f,\delta):=\sup\{|f(x)-f(t)|\colon x,t\ge0,\ |\varphi(x)-\varphi(t)|\le\delta\}.$$

An application of such an estimate to Szasz-Mirakyan operators is also discussed.

Reviewed by *Vita Leonessa*