Al-Sharif, Sharifa
On best simultaneous approximation in operator and function spaces. (English)

Summary: Let $X$ be a Banach space, $(I, \Sigma, \mu)$ a finite measure space and $L^1(\mu, X)$ the Banach space of all $X$-valued $\mu$-integrable functions on the unit interval $I$ equipped with the usual $1$-norm. We prove that for a closed subspace $G$ of $X$, $L^1(\mu, G)$ is simultaneously Chebyshev in $L^1(\mu, X)$ if and only if $G$ is simultaneously Chebyshev in $X$. Further results are obtained in the space of bounded linear operators $L(\ell^1, X)$ and in the space of continuous functions $C^1(I, \ell^p)$ with respect to the $L^1$ norm.

MSC:
41A65 Abstract approximation theory (approximation in normed linear spaces and other abstract spaces)
41A50 Best approximation, Chebyshev systems

Keywords:
best approximation; simultaneous approximation; spaces of vector functions