On invariant subspaces of absolutely (p, q)-summing operators

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Let $1 \leq p, q < \infty$ and let T be a bounded linear operator acting on a Krein space $\mathcal{K}$. We say that the operator T is *absolutely* (p, q)*-summing* if there exists a constant $c > 0$ for which

$$\left(\sum_{i=1}^{n} \|Tk_i\|^p \right)^{1/p} \leq c \cdot \sup \left\{ \left(\sum_{i=1}^{n} |\langle k_i, k \rangle|^q \right)^{1/q} : k \in \mathcal{K}, \|k\| \leq 1 \right\}$$

irrespective of how we choose a finite collection $\{k_1, k_2, \ldots, k_n\}$ of vectors in $\mathcal{K}$. These operators form a linear subspace of $B(\mathcal{K})$, the class of all bounded linear operators acting on $\mathcal{K}$, which we denote by $\Pi_{p,q}(\mathcal{K})$. The smallest constant c for which the above inequality holds is denoted by $\pi_{p,q}(T)$. Existence of a maximal negative invariant subspace for $T \in \Pi_{p,q}(\mathcal{K})$ with $\pi_{p,q}(T) \leq 1$ will be discussed.