Multipliers on generalized mixed-norm spaces

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Abstract.

Given $1 \leq p, q \leq \infty$ and sequences of integers $(n_k)_k$ and $(m_k)_k$ such that $n_k \leq m_k \leq n_{k+1}$, the generalized mixed-norm space $\ell^{\mathcal{I}}(p,q)$ is defined as those sequences $(a_j)_j$ such that

$$((\sum_{j\in I_k} |a_j|^p)^{\frac{1}{p}})_k \in \ell^q$$

where $I_k = \{j \in \mathbb{N} \ s.t. \ n_k \leq j < m_k\}, \ k \in \mathbb{N}$

Our aim is to give some necessary and sufficient conditions for a sequence $\lambda = (\lambda_j)_j$ to belong to the multipliers space

$$(\ell^{\mathcal{I}}(r,s), \ell^{\mathcal{J}}(u,v)) = \{\lambda \in \mathcal{S}; \ \lambda * a \in \ell^{\mathcal{J}}(u,v) \ \forall a \in \ell^{\mathcal{I}}(r,s)\}$$

for different sequences $\mathcal{I}$ and $\mathcal{J}$ of intervals in $\mathbb{N}$.