Boundedness of n-multiple discrete Hardy type operators

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Abstract

We find necessary and sufficient conditions on weighted sequences $\omega_i, i = 1, 2, \ldots, n - 1,$ $u$ and $v$, for which the operator $(S_{n-1}f)_i = \sum_{k_1=1}^{i} \omega_{1,k_1} \cdots \sum_{k_{n-1}=1}^{k_{n-2}} \omega_{n-1,k_{n-1}} \sum_{j=1}^{k_{n-1}} f_j, i \geq 1$ is bounded from $l_{p,v}$ in $l_{q,u}$, for $1 < q < p < \infty$. 